BOSTON'S OWN COMPUTER NEWSMAGAZINE SINCE 1986

# COMPUTER currents®

Volume 7 Number 3 MONTHLY March 1992

**PROFILE:** Speech Recognition Pioneers Dragon Systems

# Sizzling Notebook PCs

## 386SX Power To Go

**INSIDE**

*The Value Of "Virtual Desktops" For Windows*

*Cabling, The Root of Most Network Evils*

*Redefining Desktop Publishing*

*VisiCalc Creators Preview New "AtHand" Software*

**MACINTOSH**

*Speeding Up System 7*

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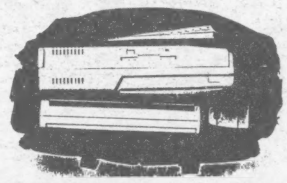

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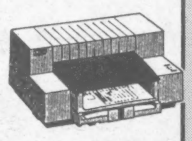

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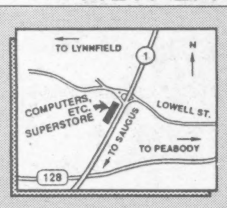


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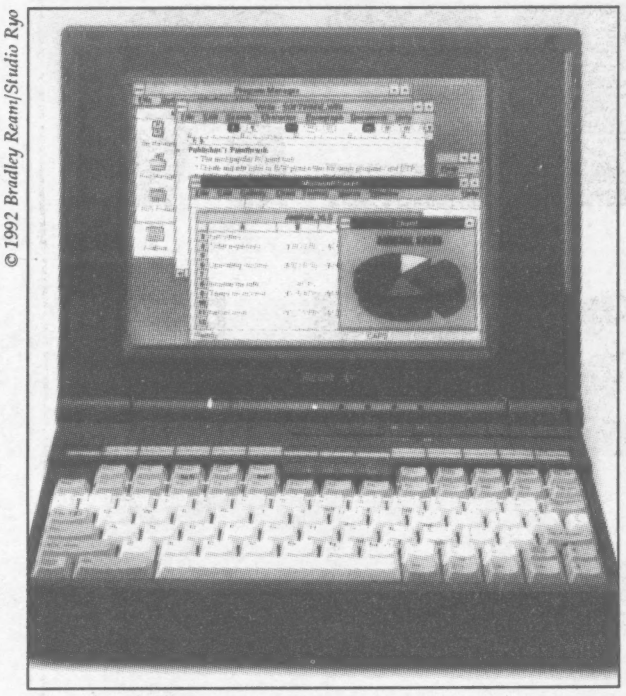
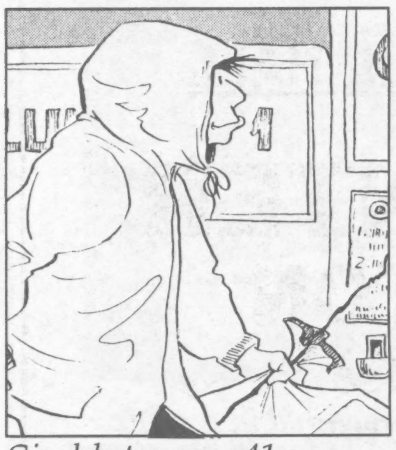
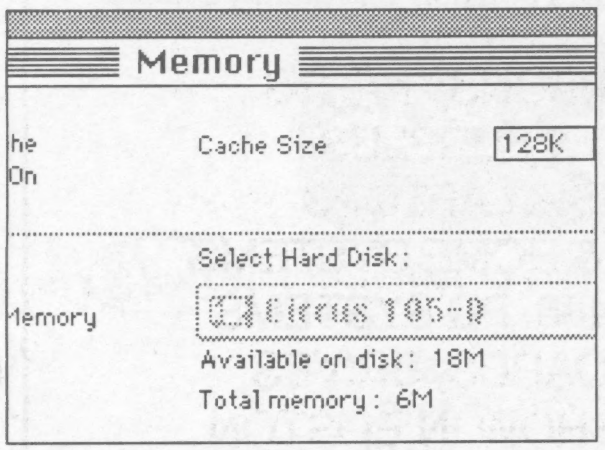


*Notebook PCs, page 21*



*Gigglebytes, page 41*




*Speeding Up System 7, page 32*

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COMPUTER Currents®

VOLUME 7
NUMBER 3
MARCH 1992

**BUYING A NOTEBOOK PC** 21
*The current crop of 386SX notebook computers offers enough options and power for just about any user. We'll show you how to go about picking the features that suit you.*
By John McCormick

**A "PREMIUM" CHOICE NOTEBOOK PC** 26
*AST's Premium Exec 386SX/25*
By Nick Anis

**TOSHIBA'S LIGHTWEIGHT & SPEEDY T2200SX** 28
By Lawrence J. Magid

**DRAGON SYSTEMS: BIG VOICE IN SPEECH RECOGNITION** 10
*Based in Newton, Mass., this upstart firm has become a recognized leader in its field.*
By Marguerite Zientara

## NEWS & INDUSTRY

**BOSTON BEAT** 6

**BOSTON COMPUTER NEWS** 8
*"AtHand" Previewed*

**NEW PRODUCTS** 15

**DEALER SPOTLIGHT** 20
*Progenius Computers, Inc.*

**BOSTON COMPUTER EXCHANGE** 37
*Used Computer Price Index*

## MACINTOSH

**MAC FEATURE** 32
*Speeding Up System 7*
By Randy B. Singer

**MAC UPDATE** 35
*Apple Demos Speech Recognition*

## DEPARTMENTS

ADVERTISER INDEX 40

BBS LISTINGS 40

CALENDAR 36

CLASSIFIEDS 38

## COLUMNS

**THE PC DESKTOP PUBLISHER** 16
*What Is Desktop Publishing Anyway?*
By Rick Altman

**WINDOWS CHRONICLES** 18
*Exploring The Virtual Desktop*
By Charles Bermant

**GIGGLEBYTES** 41
*Chips Ahoy!*
By Lincoln Spector

## NETWORKING

**NETWORK CONSULTANT** 30
*Cabling, The Root of Most Network Evils*
By Sam Adicoff

## DATES & DEADLINES

| *Publication Date* | *Deadline* |
|---|---|
| APRIL | MARCH 16 |
| MAY | APRIL 13 |
| JUNE | MAY 11 |
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By Marguerite Zientara

### High-Tech Helps Businesses Comply With New Law

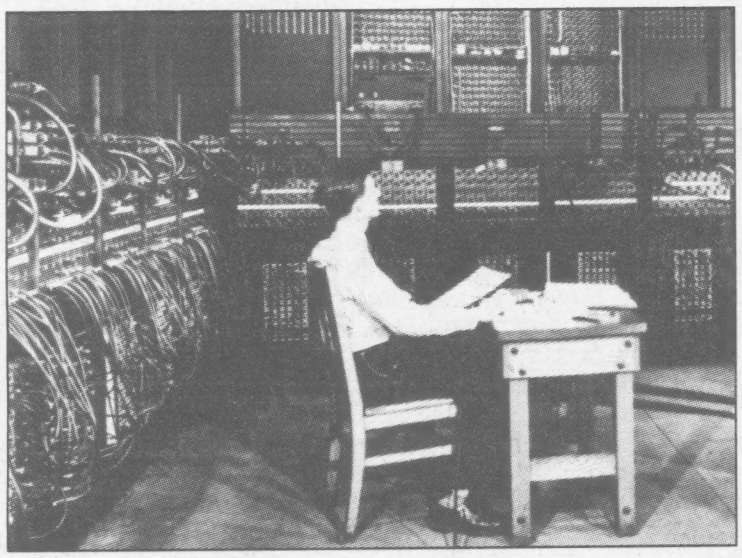
Only in the past few years has computer technology caught up with the needs of the disabled. The perfection of voice recognition, for example, has taken decades, and continuous speech recognition is still in the prototype stage (see local feature, page 10). But such efforts are exactly what will allow the productive employment of millions of capable people.

The timing couldn't be better for such technological breakthroughs, since the newly enacted Americans with Disabilities Act (ADA) will force the issue nationwide. ADA requires the following:

- As of January 1992, public and private companies must be providing public accommodations to people with disablilities. This can include building ramps, installing bathroom bars, or placing braille tags near elevators.
- By July 26, 1992, companies with 25 or more employees must begin equal hiring practices and provide reasonable accommodations for the disabled.
- By July 26, 1994, companies with 15 or more employees must also begin equal hiring practices and provide reasonable accommodations for the disabled.

Advancements such as voice recognition, synthetic speech output, enlarged screen print and transparent keyboard emulators can help the physically challenged utilize their many talents and become productive workers in a world that has too long ignored them as a valuable resource.

Approximately 43 million people in the U.S. are disabled; two-thirds of those who can work are unemployed. Leading-edge research and development can help change all that. For more information on ADA or assistive technologies, contact the Center for Computer Assistance to the Disabled (C-CAD), Suite 4041, 1950 Stemmons Freeway, Dallas, TX 75207. Telephone 214/471-0212.



*PBS is airing a five-part series, produced by Boston's WGBH, entitled "The Machine That Changed the World" from April 6 to May 4 that will look at the evolution of computers from the 1940s to the present. ENIAC (above) was the world's first fully electronic computer. It filled a room, cost the equivalent of $3 million, and had less power than a modern pocket calculator.*

### PBS To Air Series, "The Machine That Changed the World"

The evolution of the computer — from the room-sized monstrosities of the 1940s to the pocket-sized portables of today — will be traced in five one-hour programs airing on Mondays, April 6 to May 4 at 9 p.m. on PBS.

The series, produced by WGBH in Boston, tells exactly how the computer has conquered the world, altering society in profound and totally unexpected ways. Among the computer pioneers who will appear in the series are MIT's artificial intelligence pioneer, Marvin Minsky; Lotus founder Mitch Kapor; Apple co-founders Steve Wozniak and Steve Jobs; and Microsoft founder Bill Gates.

Check local listings for exact times, but whatever you do, don't miss this one!

### Donate Your Unused Computer to a Needy School, Take a Tax Deduction, Get Credit Toward a 386/486 PC

ZAKI Corp. (Marlboro, Mass.), a manufacturer of single- and multi-user PCs, has embarked on an innovative program designed to bring much needed PCs into the school system. The "Computers for Kids" program solves several problems in a win-win manner.

"My son is in the sixth grade in public school," explains Pervez Zaki, president of Zaki Corp. "Public schools are really hurting for money, and they're cutting back on the very thing that will prepare kids for the twenty-first century — computers.

"Lots of businesses have PCs and XTs lying around just collecting dust," Zaki observes. "I've been trying to get the word out that while the PCs may be useless to the businesses, they're very useful for sixth to eighth graders."

For each PC (Apple, IBM or compatible) donated, ZAKI Corp. will offer the donor a credit towards the purchase of a state-of-the-art ZAKI 386/486 PC or any PC hardware or software. This credit can be used now or in the future, and no purchase is necessary on the donor's part.

ZAKI will then offer the donated PC to a school or other charity of the donor's choice, earning the donor tax credits as well as the goodwill of the community. Each piece of equipment given to ZAKI will go through preventive maintenance and will be made available for donation.

"You can take two or three non-functioning PCs and turn them into one or two working PCs," Zaki notes. Non-operating equipment will either be serviced by ZAKI at no charge to the donor or recipient, or it will be offered to institutions that train their students to service computers. In any event, there are no fees involved.

For more information, contact Pervez Zaki at ZAKI Corp., Maple Technology Park, 420 Maple Street, Marlboro, MA 01752. Telephone 508/480-0201 or 800/874-2731.

### Quest for A Thinking Machine Continues

The second annual search for a "machine that thinks" — inspired by the writings of the brilliant British mathematician Alan Turing more than 40 years ago — is now under way.

COMPUTER Currents

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The $100,000 Loebner Prize in Artificial Intelligence is just waiting to be won... someday.

As occurred last year at Boston's Computer Museum, man will be pitted against machine next November 17 as entrants' computer software will attempt to fool human judges into thinking they are conversing with a person, not a computer terminal.

Last year, as expected, two hidden humans had the highest overall rankings, but surprisingly one of six computers fooled half the judges into thinking it was a person. Three of the judges thought one of the humans was a computer.

In a variation of the Turing Test, the 1992 contest will require computers to be conversant on only one topic, to give them a fighting chance of deceiving the judges. The 1992 winner will receive a bronze medal and $2,000.

Periodically, an open-ended contest will be held. If a computer can fool judges into thinking a computer is a person in an open-ended situation (the real Turing Test), at least $100,000 will be awarded to the designers of the system, and the contest will be abolished.

The Cambridge Center for Behavioral Studies, administrator of the contest, plans to hold the 1992 event at the Computer Museum once again. The contest is named after benefactor Dr. Hugh G. Loebner of New York City.

A printout or diskette of the conversations generated during the 1991 competition is available for a nominal fee. The diskette includes a program that will play the conversations in real-time, exactly as they occurred during the 1991 competition.

**One of six computers fooled half the judges into thinking it was a person. Three of the judges thought one of the humans was a computer.**

To enter this year's competition, applications must be postmarked by July 31, 1992. Submissions will be evaluated and screened, and no more than 10 finalists will be selected by September 30. The finalists will then compete on Tuesday, November 17. There is an entry fee of $25 for individuals and $100 for groups or institutions. For an application, or a 1991 contest printout or diskette, call Kathleen Towne at The Cambridge Center for Behavioral Studies at 617/491-9020.

### Save the Earth Online

The Global Action Network (GAN) is a non-profit computer-based education and communication system designed to provide "balanced environmental information for citizens with diverse points of view, so that they may become effective advocates for environmental protection."

Originating from Tufts University (Medford, Mass.), GAN is available through EcoNet, an international BBS that offers access to more than 600 topics or conferences pertaining to environmental issues. GAN offers basic environmental facts, up-to-date legislative information, and listings of organizations, publications and audio-visual sources for in-depth data.

Online access to both GAN and EcoNet, including one hour per month of off-peak computer time, costs $10/month. Additional off-peak computer time costs $5/hour. Peak time (Mon-Fri, 7 a.m. to 6 p.m.) costs $10/hour. Users will be billed an extra $5 sign-up fee at the end of the first month for a private account password and GAN and EcoNet user manuals.

To contact GAN, write or call Global Action Network, Environmental Citizenship Program, Lincoln Filene Center, Tufts University, Medford, MA 02155. Telephone 617/381-3423 or 800/669-4246.

### Save the Earth By Recycling Toner Cartridges

AtlanticLaser (Southborough, Mass.) joins the roster of companies that make it easy to recycle toner cartridges for laser printers and Canon personal copiers. The company offers free pickup and delivery, a $10 rebate on your first order, and regular savings of up to 50% on toner cartridges. AtlanticLaser will pay you or your favorite charity $5 for every empty cartridge you donate. The company also has a money-back guarantee, and gives a free preventive maintenance agreement to cartridge buyers. AtlanticLaser is at 5 Wentworth Drive, P.O. Box 92, Southborough, MA 01772. Telephone 508/460-6497.

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*Marguerite Zientara is the author of* ***The History of Computing,*** *copyright CW Communications, Inc., 1981; and* ***Women, Technology & Power,*** *Amacom Books, New York, 1987.*

**Appraise Your PC with the Used Computer Price Index, page 37.**


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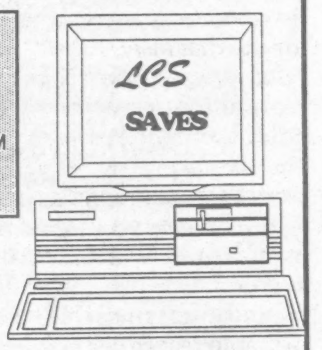


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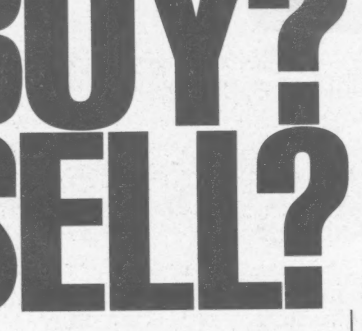

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# BOSTON COMPUTER NEWS

By Marguerite Zientara

## NEC Cuts Prices On Several Notebook Computers

NEC Technologies, Inc. (Boxborough, Mass.) has announced price reductions for the UltraLite SX/20, UltraLite SL/20 and SL/20P, and UltraLite III notebook computers.

The SX/20 is said to be the only notebook computer that lets users access such high-speed peripherals as NEC's optional Intersect CD-ROM reader. The price for the SX/20 with 40MB hard disk was $3,599 and is now $3,199. The 60MB version did cost $3,899 and now costs $3,399.

The UltraLite SL/20, with an 80MB hard disk, previously cost $4,199 and now costs $3,799. The UltraLite SL/20P, NEC's first entry into the pen computing market, offers an option for pen input. The SL/20P now costs $4,099, down from $4,499.

The price for the 4.8-pound UltraLite III notebook has been cut from $3,699 to $2,999. NEC Technologies is headquartered at 1414 Massachusetts Ave., Boxborough, MA 01719. Telephone 508/264-8000.

## Great American Offers Limited-Time Competitive Upgrade

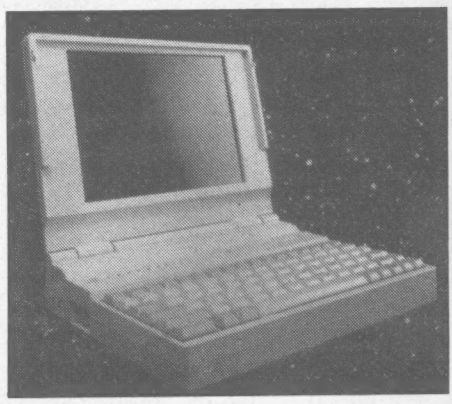
Through April 15, 1992, Great American Software, Inc. (Nashua, N.H.) will let users of competing accounting software packages upgrade to its One-Write Plus Accounting software for $89.95, and then receive a $40 rebate upon proof of ownership. One-Write Plus Accounting normally costs $169.95. The offer is also extended to small businesses looking to automate their manual accounting systems.

The Competitive Upgrade Program is based on the results of an independent market research study conducted by American Research Group (commissioned by Great American). About 1,700 randomly selected small businesses were surveyed, 52% of which indicated they would buy another accounting package due to dissatisfaction with their current package.

A research study by American Research Group in 1991 on Great American's user base indicated that more than 80% of users were completely satisfied with One-Write Plus products and services. Users said they appreciated the product line's ease-of-use, easy customization, and ability to fit a particular industry or business.

Great American is at 615 Amherst Street, Nashua, NH 03063. Telephone 603/889-5400.

## Total Peripherals Ships 386SX/20 Notebook



Total Peripherals, Inc. (Marlboro, Mass.), a maker of hard drives and peripherals, is shipping the Notebook, a 6 1/2-pound 386SX-based 20MHz computer than comes with 2MB of RAM.

The computer features a full resolution (640x480) LCD supertwist VGA monitor with 32 shades of gray, an 80-key keyboard, one expansion slot for an internal modem, and one parallel and two serial ports. Up to 8MB of RAM can be added.

The Notebook has an external AC power supply and battery charger switchable between 120V and 240V for international use. The battery is a three-hour NiCad. Options include a math coprocessor, external full-size keyboard, external color VGA monitor, Microsoft-compatible mouse, and 40-, 60- or 80MB internal hard drives.

The Notebook with 40MB hard drive costs $1,999 from Total Peripherals at One Brighton Street, Marlboro, MA 01752. Telephone 508/480-8327.

## Board Turns AT Compatible Into 386SX

Microway (Kingston, Mass.) is shipping its 25MHz FASTCache-SX/Plus full-length AT expansion card, said to couple 32-bit performance with up to 16MB of extended memory. With the card, AT owners can run 32-bit, protected mode applications and multitasking operating environments such as Windows, DESQview-386, OS/2 and Unix.

Most applications are said to run three to five times faster with FASTCache-SX/Plus, which reportedly works in more than 100 systems including Acer, AST, DTK, NEC, Tandy, Wang, and Zenith. Microway continues to test compatibility with additional systems.

The 25MHz version of FASTCache-SX/Plus costs $595. The installation/cable kit costs $95. FASTCache-SX/Plus comes with a 30-day money-back guarantee and a one-year warranty. Microway is at P.O. Box 79, Kingston, MA 02364. Telephone 508/746-7341.

# VisiCalc Developers Discuss New Spreadsheet Product

Robert Frankston, co-developer of the first spreadsheet program, VisiCalc, said that the new Slate (Needham, Mass.) product, AtHand, brings the spreadsheet metaphor to the state that he and Dan Bricklin envisioned when they authored VisiCalc in 1977.

Frankston said, "We knew what we wanted back then but we had to make compromises due to the limitations of the Apple II. This product is really what we intended 15 years ago. At that time we thought of a spreadsheet as a worksheet that made it easier to rethink problems based on changes in factors."

"What really happened as spreadsheets became more sophisticated is that they went in the direction of presentation rather than in the direction that we had hoped to take. AtHand, with its pen-based orientation, reflects our original thinking of what a worksheet should be," he added.

Frankston, now engaged in development with Slate, was one of the team with Bricklin, Bill Lynch, and Buzz Kelly that produced AtHand. AtHand is designed for use on a pen-based computer running under Go Corporation's PenPoint operating system. It will sell for $295 and will, according to Frankston, ship shortly after PenPoint is available for end-user use in the marketplace.

Frankston continued, "1-2-3 was designed for desktop use. AtHand is designed for 'back-of-the-envelope' use — the niche that the pen-based computer is aimed at. The attempt to port programs designed for the desktop to pen systems will not be making proper use of the technology. AtHand, on the other hand, was designed from the very beginning for pen computers."

Frankston added that while AtHand differs in its orientation from desktop products, "it will work collaboratively with them. We input and output files to and from 1-2-3 and Excel."

Bricklin, a vice president of Slate and Frankston's longtime associate, said that the choosing of $295 as the suggested retail price was a decision made after analyzing the actual street price of spreadsheet software.

"While existing products list for $495 and $595, the street price on the products is usually more reflective of products with suggested retail prices of $295. We expect that AtHand's pricing represents a realistic approach to pricing," he said.

Slate is located at 25 Needham St., Newton, MA 02161, telephone 617/965-8844.

*— Barbara E. McMullen & John F. McMullen, Newsbytes*

# Windows-Based Business Forecasting Software Available

Business Forecast Systems (Belmont, Mass.) has released Forecast Pro for Windows, said to be a complete rewrite of the award-winning Forecast Pro package currently in use at thousands of locations around the world.

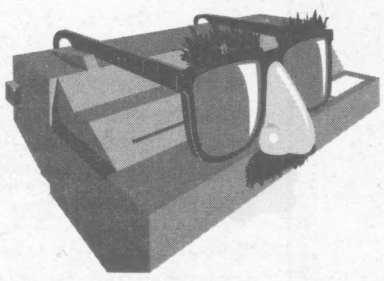
Forecast Pro is used by businesses of all sizes to forecast such things as product sales, revenues, interest rates, and demand for services. Forecast Pro for Windows uses a rule-based expert system to analyze data, recommend the appropriate forecasting technique, and explain the reasoning behind its recommendation.

A graphics utility allows users to display, print and adjust variables and forecasts. Users can create data files from within the software, import and export from other sources, read and write directly from a Lotus 1-2-3 (or Symphony) worksheet, or establish Dynamic Data Exchange (DDE) links with other Windows applications.

The software runs on 286-, 386- or 486-based PCs with 1MB of RAM, Windows 3.0 or later, DOS 3.1 or later, and a hard disk. A mouse or trackball and the Intel math coprocessor are suggested but not required. The software costs $695. Registered users of the DOS version of Forecast Pro can upgrade for $200 until May 31, 1992.

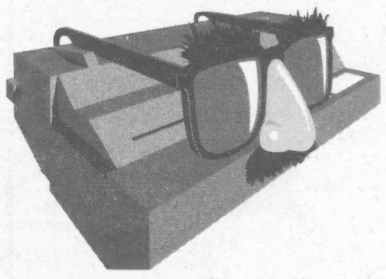
Business Forecast Systems is at 68 Leonard Street, Belmont, MA 02178. Telephone 617/484-5050.


SOME CARTRIDGES ARE GOOD AT GIVING FALSE IMPRESSIONS.



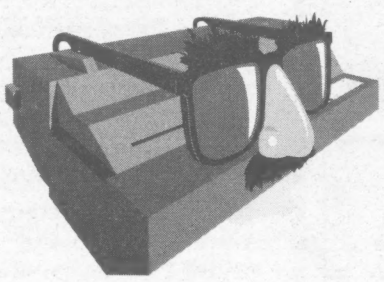
DRILL & FILL

An ill-conceived method that involves drilling holes in the toner cartridge. Contamination and failure to inspect and clean critical parts results in unhappy drill-and-fill customers.



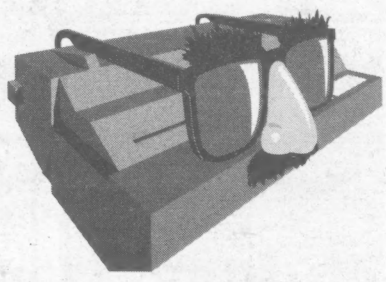
RECONDITIONERS

These cartridges get cleaned and toner is added but important parts may not be checked and replaced when necessary. Parts may wear out before the toner cartridge is empty resulting in a higher cost in materials and lost time to the customer.



REMANUFACTURERS

Worn parts may be replaced and a more effective cleaning process takes place, but in this process the customers usually get their own cartridge back. There can be a problem of contaminated toner cartridges.



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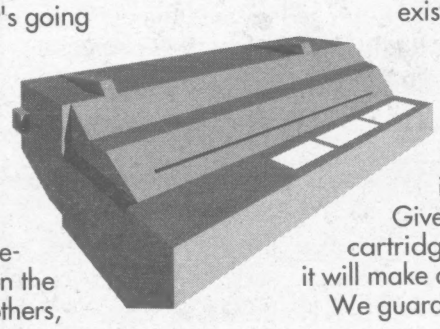

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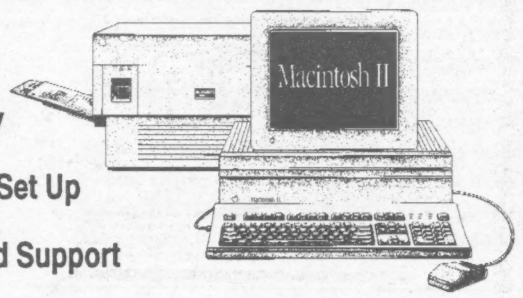


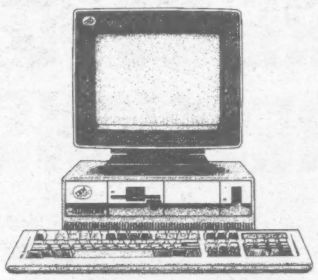

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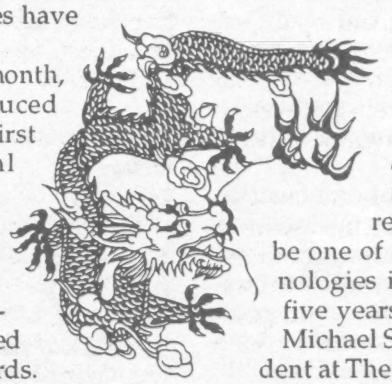
F E A T U R E

By Marguerite Zientara

# Dragon Systems, The Big Voice in Speech Recognition

If you want to behold a beautiful, mystical creature as it flashes to life on the PC horizon, keep your eye on the dragon — specifically the five-clawed Chinese Imperial Dragon (seen below), a symbol of wisdom, vitality and good fortune, that represents Dragon Systems, Inc.

Founded in 1982 to develop speech recognition (SR) technology, Dragon Systems (Newton, Mass.) struggled along throughout the '80s, while everyone else seemed to be in a boom period. Now the tables have turned.



Two years ago this month, the company introduced DragonDictate, the first commercial, general purpose, large-vocabulary (30,000 words) SR software that responded to natural spoken language rather than limited sets of preordained words.

Since then, and in the midst of our crippling economic downturn, Dragon Systems has quadrupled in size (from 15 to 65 employees), and today leads the market in an area that is just beginning to take off. Analysts expect to see exponential growth in speech recognition in the next three to five years.

"Explosive growth in speech recognition will come when lots and lots of companies have a few experimental systems in place, and then they decide to equip the whole company," projects Susan Eustis, vice president of WinterGreen Research (Lexington, Mass.). "Suppose a big insurance company does that — wow! Then once that insurance company does it, everybody else has to do it to get competitive."

There are a number of industries in which that could happen, she notes, including finance, insurance, law and medicine, as well as in the student population. Eustis, who has closely followed the entire SR marketplace for several years, calls Dragon Systems' product line "the best in the world."

Furthermore, the availability of more and more power in ever smaller packages is currently redrawing another landscape. "There is absolutely no question in my mind that speech recognition is going to be one of the critical input technologies in portable computers five years from now," predicts Michael Schneider, a vice president at The Gartner Group (Stamford, Conn.).

"Probably by 1995-96, any pen computer or notebook computer that you purchase will have incorporated on the motherboard the hardware necessary to do voice recognition," he believes. "It will be the limitations of pen computing and the ubiquity of pen computing that will trigger the market for the voice recognition world."

### Lawyers Love DragonDictate

Initially marketed as primarily a tool for the disabled — and indeed it has dramatically transformed many lives — DragonDictate has also been enthusiastically embraced by many in the business community.

"Lawyers really have an aversion to typing," notes Darcy Readman, a partner with Duncan & Craig, a large Canadian law firm in Edmonton, Alberta. "I'm terrible at it. Although a few law-

yers here do type, we thought [DragonDictate] would assist those who didn't want to type."

DragonDictate has helped not only non-typists at Duncan & Craig, but also computer phobes who no longer have to remember arcane keystroke combinations, thanks to DragonDictate's macro capability. "To do a letter here using WordPerfect, for example, you say, 'Begin letter,' and the software displays the letterhead and the date, and puts you in a position where you just say the name of your client," Readman explains.

"When you name the client, a macro comes in with the client's address. You dictate the text of your letter, then say 'Yours truly,' followed by 'Print copy.' It just prints it automatically," he says. "You don't have to hit Shift F7-1 to print. And it does the envelope at the same time."

**"I can lean back at my desk, look at the screen and daydream a little bit, and then dictate something that has occurred to me."**

Not only does DragonDictate save Duncan & Craig lawyers many steps using off-the-shelf business software, but Readman and his partner David Cook have customized a 1,500-word vocabulary for Canadian law firms.

"When you say 'Bankruptcy Act,'" he explains, "the full legal citation comes out on the screen. You don't have to cite it. So you can really cut corners because you're saying bursts of phrases. I can say, 'Whiplash 1,' and a six-paragraph whiplash letter comes out, bingo, up on the screen as quick as you do."

Readman, who thinks the customized vocabulary would be useful to American lawyers "with slight modifications," is offering it for $500 to buyers of DragonDictate. He estimates it took between 500 and 1,000 hours to develop the vocabulary.

Although DragonDictate is based on discrete speech (necessitating a short pause between each word), Readman is especially fast on the system, with a speed ranging from 50-65 words per minute (the average speed is 30-40 WPM). "I just fly with it," he says. Within a month of acquiring the software, Readman was doing about half his documentation on it; within three months he was doing everything on it.

### For Large Users, the Bottom Line is Attractive

Readman has been using DragonDictate since April 1991, and there are now 12 systems in use at Duncan & Craig. At $8,995 a pop ($2,000/copy after eight copies, with a site license), it may well appear that only lawyerly types can afford DragonDictate. The way Readman figures it, however, DragonDictate hasn't cost the firm a penny.

"When we went to our management committee, we did a calculation," he recalls. "We financed our first 10 systems over three years out, based on eliminating within 60 days 2.5 support staff and not replacing them. (At Duncan & Craig's $36,000/year average support staff salary, that's $90,000 saved right off the bat.)

"We're down 10 [support staff] since we've put the software in," he adds. "Of those 10, I can attribute six to DragonDictate and four to general industry slowdown. "Eliminating six support staff, then, is saving the company about $216,000/year.

Competing law firms in Edmonton are beginning to get a little nervous, too, Readman says, now that Duncan & Craig is up and running with speech recognition. "To keep the competitive advantage up," he says, "they have to get into the market now, because we're ahead of them already."

Garry Lane, president of the Concord, N.H.-based law firm Ransmeier & Spellman Professional Corp., is the only one of 19 lawyers there using DragonDictate. Although the firm has decided not to install it company-wide, it did recently install 45 PCs upgraded from the originally planned 386SXs to true 386s, because DragonDictate requires a 386.

### Self-Sufficiency Is the System's Real Value

To Lane, the beauty of DragonDictate lies in the self-sufficiency it affords him. "If I get a call at 4:00 in the afternoon and a client would like some papers drafted, I don't have to worry about whether there's a secretary available. I can get the papers done myself.

"One thing that's really nice about voice recognition," he notes, "is not so much that you want to just type something, but that you want to be able to see it on the screen, and you want to be able to think about it.

"I can kind of lean back at my desk, look at the screen and daydream a little bit, and then dictate something that has occurred to me, and I can use my free hands to look through my client's documents that I may want to dictate from."

Lane was also a quick learner on DragonDictate, partly because as a pilot he had the advantage of knowing the International Alphabet (Alpha Bravo Charlie...) used in radio communications, and in DragonDictate. The software uses the alphabet to learn new spellings when it doesn't know a particular word. (As an example, the

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FROM PREVIOUS PAGE

word "cab" would be spelled Charlie-Alpha-Bravo, using the International Alphabet.) "My guess is that that would be the hardest thing for someone to learn," Lane says, "or they'd have to keep referring to a reference card."

### Physically Disabled Gain Independence

The inability to type can, of course, stem from a physical problem. David Chanen, a graduate student at MIT, was in the middle of doing his master's thesis four years ago when, at the age of 24, he suffered a stroke.

Because he lost the feeling in his right hand (even though he had full movement), he could no longer do touch-typing. The stroke had also affected the part of his brain controlling language, so that Chanen's ability to spell was cut by about two-thirds.

For someone who had won an undergraduate award for the best-written thesis in the Electrical Engineering and Computer Science Department, Chanen suddenly found himself at a distinct disadvantage.

He underwent seven months of rehabilitation, then returned to MIT to finish his master's thesis. It took almost another year for the threads of fate to weave a connection between Chanen and Dragon Systems. Finally, someone at MIT heard about the DragonDictate system and suggested that it might be a good thing for Chanen to have.

In common with Garry Lane, the best thing DragonDictate can offer Chanen is self-sufficiency. "I like being independent," he says, "and I think DragonDictate gives me that opportunity to be independent."

Chanen, who is just finishing up his master's thesis, has been using DragonDictate for about 10 months. Without the software, Chanen would have had to rely on other people (supplied through an MIT program) to help him type it up. "But then I'd have scheduling problems and I'd have to be dependent on another person's schedule," he notes.

"With DragonDictate, I spend a lot of time in my office, and I do research, and then as soon as I get an idea, even if it's 10:30 at night, I can go to the

SEE PAGE 14


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## DRAGON SYSTEMS' MAJOR PRODUCTS

**DragonDictate-30K ($8,995).** Introduced March 1990. The first and only commercial general-purpose large-vocabulary speech recognition (SR) product that lets PC users create memos, reports, novels — any free text — by speaking instead of typing. Users include the disabled, people in "hands-busy/eyes-busy" environments, and business people who can't type. Includes the 80,000-word Random House Unabridged Dictionary. Interactively learns a user's vocabulary and speaking style, even if the user has a speech impediment, as long as words are consistently pronounced. Integrates with most popular business software, including word processors, spreadsheets and databases. Requires an IBM compatible with a 386 microprocessor, 8MB of RAM, and MS-DOS.

**DragonDictate-MCA ($8,995).** Introduced October 1990. DragonDictate for users of the micro channel architecture, such as IBM PS/2 series.

**IBM VoiceType ($3,185).** Introduced May 1991. Developed by Dragon Systems and IBM, IBM VoiceType has a 7,000-word active vocabulary, consisting of a 5,000-word speaker-independent vocabulary and 2,000 slots for user-defined words. Includes the 80,000-word Random House Unabridged Dictionary.

**IBM Audio Capture Playback Adaptor Board ($370); Hand-Held Microphone ($15);Headset Microphone ($150).** Note: site licenses available; developer's systems and toolkits available.

**Dragon Systems, Inc.**
320 Nevada St.
Newton, MA 02160
617/965-5200

## DRS. JANET AND JIM BAKER'S SHARED VISION

*Dragon Systems President Dr. Janet Baker and Chairman & CEO Dr. Jim Baker*

They met in the late 1960s as graduate fellows at Rockefeller University in New York. Janet MacIver and Jim Baker were both deeply involved in speech recognition (SR) research, but they approached the problem from dramatically different angles.

"We've always had a very clear vision of what we wanted to do," Janet Baker says. "We wanted to make critical contributions to the field of speech recognition, so that our vision of providing a channel for people to communicate with their machines would become a reality, in a very practical sense. That vision has not changed in 20 or 30 years."

Janet, in her student days, through work in biophysics and neurophysiology, was trying to solve the mystery of information processing in biological systems. She did some early work analyzing animal vocalizations — of hump back whales and bird songs, for example.

Jim's method was mathematical, applying stochastic processing and Markov modeling techniques (probability theories) to the analysis of speech patterns. Today, these techniques and models are incorporated into Dragon Systems' speech technology and, indeed, have been adopted as the leading technical approach to high-end SR systems worldwide.

"Both approaches were considered controversial at the time," says Jim Baker (who had the highest freshman grade point average in the history of Princeton University and later was valedictorian of his class).

Janet eventually moved from animal vocalizations to human speech, for practical reasons. "There's no way of knowing whether you're properly characterizing a bird song," she smiles. "We don't know what the birds are saying or what the whales are really saying, so you can't tell if you're right or wrong. With human speech, you've got a way of checking it."

From Rockefeller University, the Bakers transferred to Carnegie-Mellon University, which was a key developer of SR research for the Defense Advanced Research Projects Agency (DARPA). Dragon Systems today does research projects for DARPA.

After earning their Ph.D.s, the Bakers joined IBM's Yorktown Heights (N.Y.) Research Center, where they continued working in SR for the next five years. Although the Bakers enjoyed IBM and the people there, they felt strongly that their research needed the involvement of "real users" for valuable feedback on their efforts.

In the late 1970s, they left IBM to go to Exxon Enterprises' newly created Verbex division, dedicated to developing office automation technologies. There, they had thousands of users to learn from. Unfortunately, three and a half years later, Verbex decided to focus on projects other than such long-term goals as the Bakers were concentrating on. The Bakers knew it was time to move on.

Since the appearance of the personal computer several years earlier, the Bakers had known what they had to do. "As soon as the microprocessor became available, it was clear to us that this was the wave of how things were going to happen," Janet recalls.

So, in 1982, they took the plunge. With no premeditation, with a big house mortgage to pay, two young babies in tow and, they figured, enough personal savings to last a year and a half, Janet and Jim Baker started Dragon Systems, Inc.

They had no outside funding then, and they have no outside funding now. What got Dragon Systems through the lean times was an extraordinary sense of commitment on the part of everyone concerned. "All the people who joined us early on had that commitment," Janet says. "All our initial employees worked for zero salary for well over a year, and then they got only

CONTINUED NEXT PAGE


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FROM PAGE12

system and start dictating," Chanen says. "But I couldn't do that with a person."

Furthermore, the fact that DragonDictate is bundled with the 80,000-word electronic Random House Unabridged Dictionary is especially helpful to Chanen and others who have trouble spelling. "It's really good to have the system," Chanen says, "because besides the typing, it also helps with the spelling."

**"Speech recognition is going to be one of the critical input technologies in portable computers five years from now."**

### What Are DragonDictate's Problems?

Users experience mighty few problems with DragonDictate, it seems, once they get used to the International Alphabet and the quarter-second pauses between words. "I think it's a very well written system," adjudges the gifted MIT programmer David Chanen.

"I think one time there was a bug, but it seemed to go away when I reloaded the original system from the disks," he notes. "It might have been something dirty in the disk drive — you never know."

Garry Lane's worst problem was one of memory management. Since DragonDictate requires 8MB of RAM, his database software was fighting DragonDictate for memory space, and for a while nothing would work.

A call to reseller CompuCare (Peterborough, N.H.) — who Lane says equals Dragon Systems in support — quickly solved the problem and soon Lane was able to run both programs simultaneously.

Darcy Readman, the Canadian lawyer, has had no problems with the software. "The only down side of the software is you've got to commit yourself to making it work," he says.

"If you won't make that commitment, it's not like you can just take it out of the box and start using it. You can in some respects, but you've got to take the time to understand the program. And it's not a very tough program to understand."

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*Marguerite Zientara is the author of* ***The History of Computing****, copyright CW Communications, Inc., 1981; and* ***Women, Technology & Power****, Amacom Books, New York, 1987.*



FROM PREVIOUS PAGE

incremental, partial salaries."

That includes ex-Verbex employees Paul Bamberg and Robert Roth, who are still on Dragon's research staff. Bamberg, who was and is also on the faculty at Harvard University, has been responsible for making Dragon's SR technology run on PCs.

With Jim as Chairman and CEO and Janet as President, Dragon Systems has survived and is now thriving. Their products (see box, page 12) generate "lots of" revenue (they prefer not to disclose the amount), much of which they plow back into research and development.

Dragon Systems has numerous OEM agreements, including deals with IBM (IBM VoiceType), and Lanier Worldwide, Inc. (EMstation for emergency medicine reporting), and the company recently announced that DragonDictate will be available through Digital Equipment Corp.'s DECdirect mail-order catalog.

One internally funded research project is the translation of DragonDictate into German, French, Italian, Dutch, Spanish, Swedish and Japanese. The first foreign language version, in German, is expected to be ready this year.

Although Dragon Systems has "no immediate plans" to go public, it is currently considering setting up several subsidiaries, both here and abroad, with opportunities for people to have equity investments.

In the midst of such activity, success and excitement, what is Dragon Systems' greatest challenge today? "I guess the biggest challenge is assessing and evaluating all the different business opportunities we have right now," Janet Baker says. "This technology fits everywhere, but that doesn't mean it fits everywhere equally well, or that the opportunities everywhere are equivalent."

Whatever Dragon Systems decides to concentrate on in the future, chances are the company will remain the market leader in speech recognition. "We are committed to putting enough energy and manpower and resources to do a superior job at anything we choose to do," Janet Baker says.

You can believe her when she says, "Speech recognition is not going to wait for the year 2000."

# NEW PRODUCTS

## Group Calendaring Software

The Windows Support Group (WSG; New York, N.Y.), has released The Corporate Calendar. This is a Microsoft Windows-based application that can make the task of scheduling meetings and gatherings easier than manual methods.

Those of us with corporate backgrounds can appreciate the difficulty of trying to schedule a meeting with multiple individuals' different time requirements. The Corporate Calendar is a networked product that attempts to solve that exact problem.

The Corporate Calendar runs as a structured query language (SQL) Server application in a client server mode. This allows the corporation to keep its directory on the server as well as information on conference rooms and personal calendars. Anyone who wishes to plan a meeting can enter the program and peruse the availability of all the people invited to the meeting as well as availability of conference rooms. Should a time be found when all of these match, it becomes a very simple matter to schedule everyone for that meeting.

Thanks to the use of Microsoft's SQL Server, there are practically no limitations on the size of the directory that can be kept or many other parameters. As the number of users and the database size grows, the software can be moved to ever larger and multiple hardware sets.

The Corporate Calendar is available now. It sells for $275 per user and requires the use of SQL Server version 1.1 or later. Call 212/675-2500 for more information.

*— Naor Wallach, Newsbytes*

## Microcom Updates Virex Virus Software

Microcom (Norwood, Mass.) has released version 2.1 of its Virex for the PC virus-detection software. Version 2.1 adds a new VPCScan interface, the ability to be loaded into high memory, and more than 100 new virus detectors, the company claims.

Microcom officials said the upgrade makes it easier to adapt Virex to individual user needs. New options include a menu-driven scanner interface and direct access from within Microsoft Windows.

Using Quarterdeck Office Systems' QEMM memory management utility or the built-in memory management features of DOS 5.0, Virex for the PC 2.1 can be loaded in high memory. This allows users to use more base memory for other applications, Microcom said.

The new release also contains more than 100 new virus detectors, including a detector and disinfector for Michelangelo, a new, widely-spread variant of the Stoned or Marijuana virus. Steve Winegar, director of marketing at Microcom, said the rate of appearance of new viruses has "certainly escalated over the last year or so."

Microcom releases quarterly updates to Virex to add detectors for newly discovered viruses. Winegar explained that in many cases the software will warn of the presence of even a virus it does recognize.

Registered users who purchased Virex for the PC after June 30, 1991, will receive a free upgrade to version 2.1 as part of their six-month free subscription service. Users who purchased Virex for the PC before that date can buy the upgrade for $25.

The retail price for Virex for the PC 2.1 is $99.95, and the software is available now. Call 617/551-1000.

*— Grant Buckler, Newsbytes*

## Ergo Ships 386DX "NoteBrick" Portable

Ergo Computing, Inc. (Peabody, Mass.) is shipping a 33MHz 386DX notebook PC that weighs in at 8.7 pounds and measures 2.2 x 10.2 x 11 inches with attached battery. The NoteBrick is said to be suited for such demanding applications as Windows packages, desktop publishing, and computer-aided design.

Featuring an Intel 386DX microprocessor with 32K cache memory, the NoteBrick can be configured with 4MB or 16MB of RAM.

The capacity of the hard disk can be doubled to 160MB using the "addstor" SuperStor data compression software included with the NoteBrick.

The NoteBrick has the following ports: one serial, one parallel, external keyboard, expansion chassis and external floppy drive. An optional portable expansion chassis ($295) accommodates two ISA half-length cards and has two serial and one parallel port.

The NoteBrick can operate continuously for about two hours on one external NiCad battery. The battery can be recharged in two hours, while the system is operating.

A NoteBrick with 4MB RAM, 80MB hard disk, 3 1/2-inch 1.44MB floppy, SuperStor, AC power supply/charger, one Battery Pak, external numeric keypad, AT-to-PS/2 keyboard adapter, DOS 5.0, online hypertext Help, and carrying case costs $2,995. Ergo is at One Intercontinental Way, Peabody, MA 01960. Telephone 508/535-7510 or 800/633-1925.

*— Marguerite Zientara*

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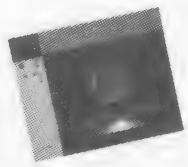

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By Rick Altman

# Just What is Desktop Publishing Anyway?

A funny thing happened to me at the recent Windows & OS/2 Convention in San Jose, Calif.: I forgot what I do for a living.

There I was browsing the booths when I came upon a nice-looking telecommunications program for Windows. I introduced myself as the DTP columnist for *Computer Currents* and noted that the product seemed worthy of review.

"That's nice, Mr. Altman," came the reply, "but our program really has nothing to do with publishing."

"Uhhh."

I flushed with embarrassment and felt as if I had been caught trying to cop a free piece of software. In reality, I had forgotten my line of work. This modem program had a nice graphical interface, support for Windows-based screen fonts, a font dialog box, and a Print command. It met many of the criteria I use for determining a program's publishing capability, even though it had little or nothing to do with publishing.

**It used to be so easy. If a program produced text, and was graphical or used a mouse, it was almost certainly DTP software.**

It used to be so easy. If a program produced text, and was graphical or used a mouse, it was almost certainly DTP software, and the ability to change fonts or output to a laser printer was a dead giveaway. Today, every Windows-based application offers those staples, and as you know, it's virtually impossible to distinguish a high-end word processor from a medium-powered DTP program. In fact, as I have long bemoaned, a modern word processor is considered to be worthless trash unless it can import graphics, set text in multiple columns and in boxes, and produce newsletters and brochures like PageMaker and Ventura do.

Paint and drawing programs have always been considered worthy adjuncts to DTP pursuits, but today, the landscape is so much more complicated, more cluttered. Take Harvard Graphics for Windows or Lotus Freelance, two well-respected presentation programs. They mix colors professionally, produce stunning art on all forms of high-resolution printers, and import graphics, text, and charts with ease. But are they part of the desktop publishing domain or have they defined an entirely new segment of the marketplace? If I reviewed the new Harvard Graphics in this column, would you think it strange? After all, the program can't even support paragraphs of text or automatic hyphenation.

With every program this side of Notepad capable of producing typeset-quality resolution, and with most programs offering unparalleled support for industry-standard typefaces, it's clear that we need sharper definitions for desktop publishing. My sister Jan discovered this for herself the other day. A well-known Word for Win-

dows trainer, she set out to produce a brochure with the product and succeeded in establishing the page size, orientation, number of columns, and general layout. She composed the copy, fit it, developed styles, assigned them to the appropriate headings, and printed what she expected to be a fine-looking draft of her brochure.

Then she examined the copy a bit more closely and found gaps between letters and words that were below the standard she set for the brochure. Her only option was to manually adjust the misappropriated space, case by case. It was right around then that she realized once and for all: Word for Windows is a fine word processor, but it's no desktop publisher. She went next door — electronically speaking — and finished the brochure in PageMaker.

The key word here is expectation, the bane of every publisher's existence. Should Jan have expected Word for Windows to hold to her expectations? Why not — she had seen about 1,000 print advertisements for the program, all showing finely-honed documents produced in Word. She had every reason to believe the program was, well, a professional publishing tool.

With the debut of photo-realistic color to the desktop, the boundaries of desktop publishing are sure to be redrawn again. But if we allowed a bit of license with the word "desktop" before, now we'd be getting away with murder, as four-color separations could require small truckloads of equipment. Still, the intelligence and creative energy can be wielded from a keyboard, monitor, and mouse, and so I understand its place in the desktop metaphor. But is it mainstream desktop publishing? Do many of you expect to practice desktop color separating? Should I cover it in this space?

Who's going to define the new era of desktop publishing? Perhaps not me — I'm the one who forgot what I was writing about in the first place. Maybe we're ready to retire the word "desktop" for good; "electronic publishing" is certainly more descriptive, and it doesn't carry the amateur stigma often assigned to DTP.

Ultimately — and isn't this a cop-out — the final word is yours. The user arena remains the most opportune theater for determining our direction, our trends, and even the terms we use. Therefore, as always, I await your input and insight into the very burning question: Just what is electronic publishing, anyway?

**Maybe we're ready to retire "desktop;" "electronic publishing" is certainly more descriptive, and it doesn't carry the amateur stigma often assigned to DTP.**

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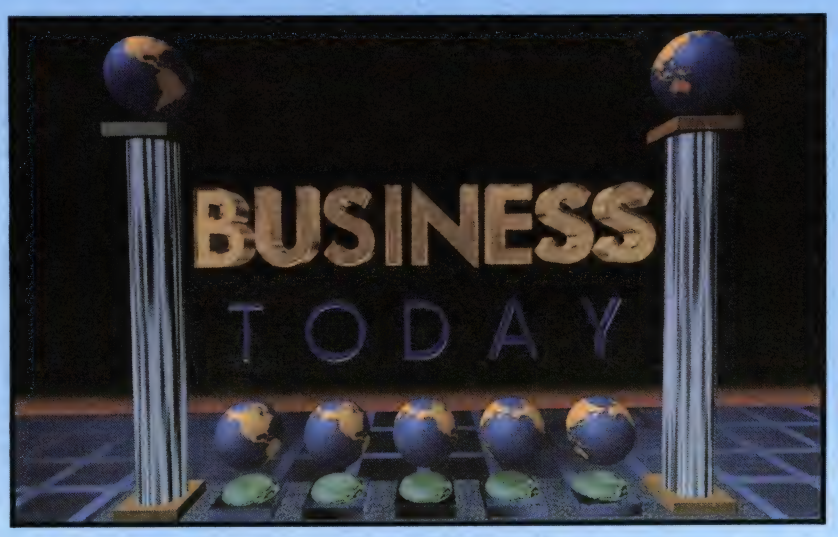
*Rick Altman has authored books on Ventura Publisher, PageMaker, CorelDRAW, Harvard Graphics, and DESQview. He consults and lectures on corporate publishing throughout Northern California. You can write to him at 20204 Merritt Drive, Cupertino, CA, 95014, or on CompuServe (72341,1714).*

**Check out the Bulletin Board Systems and User Groups in the Greater Boston Area!**
See page 40

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By Charles Bermant

# Exploring The Virtual Desktop

## *Utilities Help Organize Your Windows*

The password is "virtual." One of the wonderful by-products of technology is the opportunity to learn fancy new words, or revised definitions for the old ones.

In this case (and with regard to Windows), virtual pertains to multitasking. In enhanced mode, Windows creates a "virtual machine" for each DOS application, allocating it a full 640K memory plain. This enviable trick is accomplished through "fooling" the application to think that hard disk space is actually RAM. In theory, this gives you unlimited potential to run DOS applications and tempts users to employ Windows simply as a task switcher.

There is no reason that such a nifty word can't be used more than once. With that in mind, we are now seeing a plethora of so-called "virtual screen" programs, which extend the viewable area of the Windows environment. Essentially, a virtual screen program turns your monitor into an adjustable peephole onto the desktop. You move this viewer around to expand the workspace, as if it were a magnifying glass over a large canvas.

The great news about these programs is the ability to create several independent desktops — hence the name. Each quadrant becomes an area unto itself, which can contain several programs and icons. So on Desktop #1, you can have Winword and Grammatik, and dedicate file management to Desktop #2. Crosstalk can sit on Desktop #3, while a phonebook program occupies Desktop #4. Each space can also host minimized icons that pertain to the main application. The possibilities are endless, or at least virtual.

Again, the nasty "T" word. This works in theory, while real-life experiences may differ. Virtuality opens a new prairie, but RAM and system resources are as hospitable as a barbed wire fence. Consider the phonebook example: I use the DeskTopSet, the best in this category, which unfortunately takes more than its share of system memory. Leaving this program open on a separate screen in the recesses of a system causes the whole machine to crawl. The time saved switching back and forth is offset by the general slowdown. So "virtual" isn't always "better."

On the other hand, if you have a RAM-robust PC and well-behaved applications, a virtual utility offers a better way to switch back and forth between programs than the standard Task List.

### Virtual Leader

The best virtual desktop program now available is Attitash Software's Wide Angle 2.0, an upgrade of a program that has been available for some time. The problem with the original Wide Angle wasn't really Wide Angle's problem, it was the aforementioned tendency of applications to hog system memory. The evolution in applications, along with some welcome improvements, places Wide Angle at the head of the pack.

Wide Angle's icon is divided into eleven segments. Clicking on any of the numbers, from one to nine, takes you to that desktop. System functions are modified through its Control Box, which is about one-sixth of the standard Windows component, while the icon's upper-right-hand section calls up Wide Angle's "x-ray view." This value-added icon shows how the power of these little squares can be harnessed, although some detail-wary users might not perceive this as an advantage. The icon is always visible — you can move it to whichever corner of the screen is the least obtrusive — and a mouse click takes you to any of the eight other desktops with deliberate speed.

Wide Angle has a number of extras. You can designate each desktop for a


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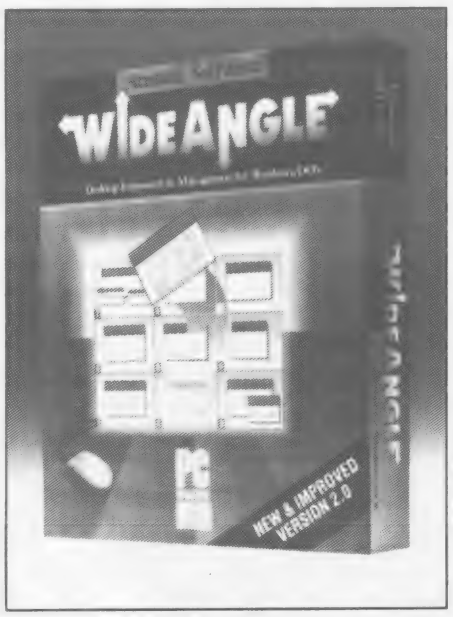
specific function, and automatically load grouped applications. Certain desktops can be assigned as DOS areas, and run non-Windows applications in full-screen mode (where virtual meets virtual). And a desktop map view shows where all applications are at a particular time, and allows you to relocate them at will.

Furthermore, the x-ray view acts as a smart task list, locating each application without regard to the nine virtual desktops. This is ultimately helpful especially for people with messy desks. (Just because you are given more space, it doesn't mean that things will become less disorganized).




*Attitash's $129 Wide Angle lets the user create up to nine "virtual desktops." The user can switch to a particular desktop by clicking on the Wide Angle icon.*

### A Different Tack

Another virtual option comes from Aristosoft's MoreWindows. Instead of several adjoining compartmentalized screens, MoreWindows enlarges the desk space into a single entity. Here, the porthole analogy becomes more appropriate. You are given access to a larger screen, scrolling wide or deep to gain Windows environment. This program can make you dizzy.

At the same time, if you have a large and wide document or spreadsheet, MoreWindows offers fast and convenient access to data that may be part of the periphery. You can use MoreWindows to view one giant document, or allocate corners of the giant desktop to different programs. For instance, you can (once you've mastered the fine points of scrolling mouse motion) be using Winword and then just slide on over to Crosstalk to check your MCI Mailbox.

MoreWindows has its share of inconveniences. Aside from taking some time to master its fine points, it does its stuff by replacing the Windows screen driver. This means you can't turn it on and off in the same way as Wide Angle or other virtual programs that load as a separate application. It also has its way with your color scheme, making subtle changes to available choices. On the other hand, the slide motion is unique. If the magnifying glass motion makes sense for your applications, MoreWindows makes up for the inconvenience and becomes worth twice the admission cost.

In a somewhat bizarre, don't-try-this-at-home twist, I found that WideAngle and MoreWindows actually work together. If MoreWindows wasn't making me dizzy already, this would certainly do the trick.

### Virtual Conclusions

Virtual screens, as a category, take some getting used to. A "normal" user is more likely to lie awake at night dreaming of a larger monitor, rather than wishing for more "virtual" space.

Another better idea is already here, as part of a virtual desktop module present in hDC's Power Launcher. (Here, this capability is one utility within a larger package, instead of being its own, ah, virtual product.) Power Launcher allows you to configure how many screens you have across and down, to fit your needs. In theory (that word again) you can install 64 screens (although with that many, the icon would be a bit hard to control). In practice, it increases flexibility; you can save resources by installing a 2 x 2 screen environment instead of opting for the arbitrary 3 x 3.

As silly or unnecessary as they may sound to some users, virtual screens offer an intelligent, original way to manage multiple applications. If you've tried these products once before and have been underwhelmed, the time may be right to give them another chance.

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*Charles Bermant can be reached through MCI Mail as "cbermant."*

**Product Info**

**Wide Angle, $129**
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603/882-4809

**More Windows, $99**
Aristosoft
6920 Koll Center Parkway
Pleasanton, CA 94566
510/426-5355

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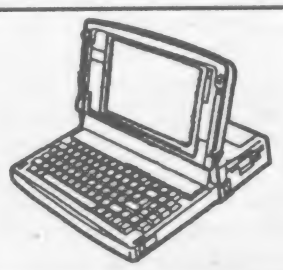

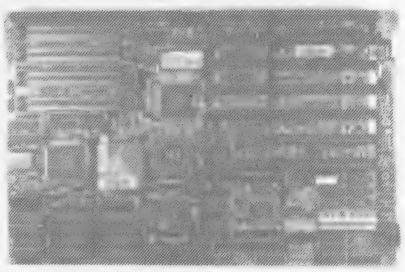

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# DEALER SPOTLIGHT

**Interviewed by Marguerite Zientara**

*"Our big thing is finding out exactly what the customer wants."*

| | |
|---|---|
| **Company Name:** | Progenius Computers, Inc. |
| **Address:** | 71 Washington Street, Brighton, MA 02135 |
| **Telephone:** | 617/789-4122 |
| **Type of Sales:** | Storefront — new and used computers. |
| **Hours:** | Moday-Friday, 9-9; Saturday, 9-5 |
| **Established:** | November 1990 |
| **General Manager:** | Dan Joseph |
| **Salespeople:** | 3 |
| **Hardware:** | IBM and compatibles, Apple, Macintosh, Amiga, Commodore, Atari (ST and 8-bit). |
| **Software:** | Used software with manuals. Ranges from business packages to games. |
| **Consulting:** | Yes |
| **Training:** | Expects to start offering in-store classes by June. |
| **Service Department:** | Two in-house technicians able to repair all hardware lines sold; some service repairs are contracted out. |
| **Warranties:** | 30 days parts and labor on used equipment; 1 year parts and labor on new equipment. |

*Progenius Computers' Sales Manager Brian Jacobs (left) and General Manager Dan Joseph.*

You won't get the hard sell at Progenius Computers, Inc., where two youthful entrepreneurs do sales, technical repairs, consulting, and everything in between, in an atmosphere that's very informal and friendly. General Manager Dan Joseph and Sales Manager Brian Jacobs play host to a large number of regular customers. "People can come in and sit down and just chat with us," explains Jacobs. "One of our customers sent us this Christmas card — 'To Dan and Brian and all the "regulars" at Progenius.' It's like 'Cheers' in here."

Progenius' mother company started in Montreal, Canada eight years ago. There are now three Progenius stores in Canada: in Montreal, Ottawa and Toronto.

We spoke recently with General Manager Dan Joseph, who came here from Toronto a year and a half ago to open up the Boston store.

**How did you happen to join the company in Toronto?**

I'd bought a computer from them. Pretty much all our staff has started out by buying a computer from the company, and getting to know the people, and it goes from there.

**Your Sales Manager, Brian Jacobs, mentioned that the sales people are not on commission, which creates a very relaxed atmosphere in the stores.**

Exactly. Computer stores are usually commission sales, so you tend to find that the salesmen are trying to sell people stuff they don't need, obviously because they make more money on the higher models. So they start high and if they have to work lower, they do.

Whereas because we're on the used market, and we don't do a commission sale, we try to place customers with the machines they need. That way, the salesmen aren't all partial to whatever makes the most money. It makes more sense that way.

**I understand you encourage customers to try out the machines and really play with them before they buy.**

Here, you can bring in your own software, try out a machine, and see if it's fast enough for you.

Our big thing is finding out exactly what the customer wants. A lot of people come in wanting to spend more than they really need. For example, I had a customer who was convinced he needed a 386 to do word processing because his friend used a 386 to do word processing. We talked for about 20 minutes and then he realized that it was completely a waste of money to go to a 386. Now he's a lot happier.

**How does Progenius differ from the few other stores that deal in used computer equipment in the Boston area?**

The one thing we do different is that, although we will do consignment if a customer wants to, we mainly buy outright. Mainly, people just want to get rid of stuff and make a little cash, or trade something in. That's where the benefit is, whereas a store that sells strictly on consignment takes a commission after they sell your machine.

**What else makes you unique?**

We're definitely unique in terms of our inventory, specifically some of the older machines we have. Nobody else does any of the older stuff. Most of the used stores will be used IBM and used Macintosh, but that's it. They won't touch anything else. They won't get into Apple, Commodore, and they definitely won't get into Atari.

Because of the three stores in Canada, whatever we don't have, we can call to the other stores, or customers can call and check themselves.

**How do you actually set the prices on used equipment?**

It's pretty much the going rate. Usually it works out to about a quarter of what they sell for new.

**What's selling the best right now, new, on the hardware side?**

The 386/25MHz I guess is the most popular, with a SuperVGA-type setup.

**How about on the used side?**

The XTs. Most of the students in town who don't buy Macintoshes tend to go to a used IBM XT because it's great for word processing.

**Are used Macs in high demand?**

We get sometimes 50 calls a day for used Macs. It's just amazing how many people want Macs.

**Does Progenius have any expansion plans in the future?**

Opening more stores in the States.

Then eventually, we'll push for national mail-order sales.

# Buying a Notebook PC

## *Current Selection Offers Enough Options and Power For Just About Any User*

By John McCormick

*Six-pound computers? How do they do it? Many of you probably don't share my degree of wonder when I see the ever-smaller computers coming on the market these days because to you computers were never really very large.*

But to me these 386SX notebook computers are just amazing because they are actually smaller and weigh less than the programs I used to run when I first worked with computers in the early '60s.

Back in those days shorter programs came in boxes of Hollerith cards (mistakenly called IBM cards by some) and an accounting program could easily weigh 60 pounds. In the '60s we weighed computers by the ton instead of in pounds and ounces.

Now systems are smaller, but PCs are still about the same size they were back 10 years ago when they were introduced because they are small enough, and it is a convenient size.

The same size considerations will mean that laptops probably won't shrink much more in size because they need to be large enough to contain both a viewable screen and a full-size keyboard. Notebook computers will continue to lose weight and gain features but, other than getting a bit thinner, they will retain about the same form factor for some time.

I have used a number of MS-DOS notebooks and laptops in the past few years and found that, although all of them were acceptable, reading the specifications just didn't provide enough information to let me choose between them if I was footing the bill.

The feel of a notebook PC is much more important than the feel of a desktop computer because, while it is an easy and relatively inexpensive process to swap keyboards until you find the one that is the perfect interface between you and your desktop system, you just don't have that luxury with portables.

*The $3,099 (suggested retail price), 5.8-pound 20MHz/386SX Epson NB3s. "Published weight figures don't always agree with the actual product so consider weighing your candidates — remember they will weigh you down for a long time to come."*

Also, desktop units are often purchased separately from their monitors, another item which greatly affects the computer's feel but that can't be separated when you are talking about a notebook.

Even the notebooks that let you plug in a full-size keyboard don't offer a real solution because you can't tote that keyboard around with you.

Keyboards and screens are vital components that either make a notebook computer a pain to use or a joy, and the best way to choose one is not from reviews but by trying one out in the store where you buy your computers.

Nevertheless, I do want to mention some notebooks I have tested and enjoyed using, including the nice Samsung NoteMaster 386S evaluation system which recently arrived with Windows 3.0 already installed.

Because the GUI was already installed, I know that the Samsung screen can easily handle Windows graphics, including the demanding and much-played Solitaire window. I have to confess that if Windows hadn't been in there already I wouldn't have bothered with it; I am definitely a DOS-prompt man from the word GO.

The Samsung has a nice solid feel, which it should have, given its slightly heavy seven-pound weight (more about that later). The keyboard is a bit soft for my taste, with no "click," but that is a matter of taste, and my wife thinks it's great. Certainly this is a better keyboard than many on the market.

The side-lit screen is excellent and I had no trouble reading it directly under an office desk lamp or in any other test location, many of which have rendered some other laptop screens useless. LapLink and Windows 3.0 are included with the computer, as is a battery that can run the unit for about three hours.

One very important feature on the Samsung, and well worth the extra expense of this unit for many portable users, is the ability to operate both the system screen and a separate monitor (or, more importantly, a projector) at the same time. Normally when you hook up a monitor to a portable you lose the LCD display, which is all well and good if you are using the portable as a substitute desktop unit, but what if you are taking it along to a lecture hall to give a demonstration?

I can report from experience that it is no fun at all swiveling your head every few seconds, trying to see what the projector is showing behind you, while you try to run a demo or slide show from your keyboard and talk to an audience at the same time.

If you need this feature, then the Samsung is not merely competitive but a solid bargain, especially after the company did some recent aggressive price-slashing which brought the 16MHz version with a roomy 60MB hard drive down to less than $2,399. The 20MHz version costs $300 more. The Samsung also includes a built-in mouse port, something you will see more of in these days of Windows 3.0.

The slightly high weight of this Samsung NoteMaster also brings up an important point — namely that published weight figures don't always agree with the actual product so consider weighing your candidates — remember they will weigh you down for a long time to come.

Case in point — the NoteMaster is an honest (advertised and weighed) seven pounds, but some of the other early entries in the notebook market, ranging from Compaq to AST and Altima, gained anywhere from a handful of ounces to nearly a pound between announcement and shipping. Take that into account when someone is trying to tell you that the Samsung is just too heavy.

A final note: My most recent evaluation unit — the Samsung — has no handle; for that you need the optional carrying case, but it is nicely shaped so you can comfortably carry it under your arm just like one of the old-fashioned notebooks (with real paper) for which this class of computer is named.

I have evaluated both Compaq LTE and SLT portables and they were fantastic in their time but are now just too overpriced to bother commenting on.

I do still love the jet-black Zeos notebook that I used for several months and that has since dropped in price by $200, making it an even greater bargain for a system that is backed by a

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FROM PREVIOUS PAGE

30-day money-back guarantee and 24-hour, toll-free help.

It had a big screen which proved viewable in all but the worst circumstances, a comfortable keyboard, and distinctive styling. With the 20MHz version now selling at just under $2,000, how can you go wrong?

Earlier Dell's ghost-gray 320N had won my heart both with the feel of the computer and the very long three-hour battery life which is enhanced even more by the extra backup battery that keeps your data in memory while you swap batteries.

All notebooks feature removable batteries, but manufacturers never seem to mention that if you try swapping them with an application running you lose your data because the system reboots. Not so with this Dell, which allows you to swap batteries for long sessions in the air without first shutting down your present task.

Every notebook offers its own special quirks or features and unless you are buying one for only occasional use you need to really look them over before making a buy. Notebooks aren't quite the commodity systems that desktop computers have become.

The most important piece of advice I can give readers about their purchase of a 386SX notebook computer is, if you need one, don't wait! This is the time!

I say this not because they won't continue to improve but because for most users they already offer all the power and features needed, and while delay may save a few bucks or add a new whiz-bang feature that you probably don't need anyway, there are no major advances on the near horizon that will make the present crop of notebooks obsolete before you have gotten your money's worth out of them.

The Compaq SLT was an impressive entry in its time, followed by the LTE. Few people would want to invest that much in a notebook today when others

## How do they do it?

Although they run the same software, laptop computers are not just desktop computers with all the expansion space and fan removed; they actually use some different technology. Size and power consumption have driven the changes needed to make computers smaller.

Hard disks are essential to making notebook systems as capable and readily accepted as desktops and several hurdles had to be overcome in their design because 2 1/2-inch drives are not just small versions of older Winchesters.

Notebook drives have four power stages which allow them to drop their power consumption from an intolerable (for batteries) 15 watts to less than one watt.

The stages are: in use, or active; spinning, but not being accessed; stopped or standby; and powered down where the entire system is shut down.

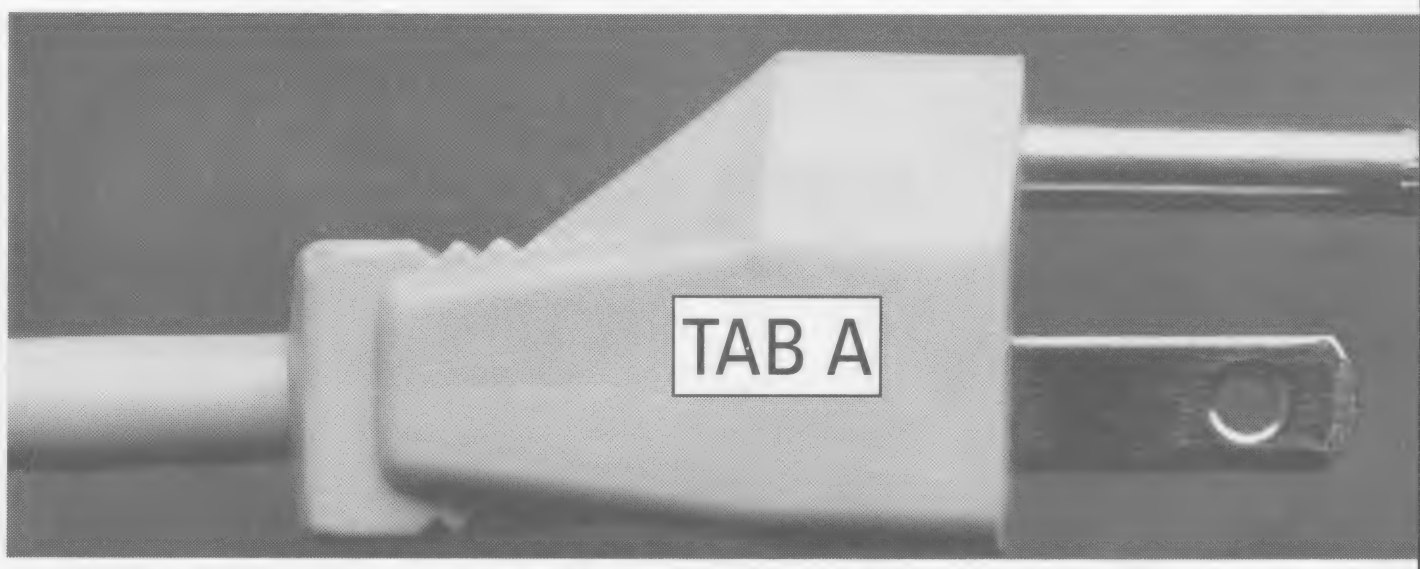
Notebook drives have to start and stop far more often than desktop units, but this would quickly damage the media in a traditional drive because the read/write head drags on the magnetic particle surface until the disk speed picks up enough to lift the head with wind pressure.

Longmont, Colorado-based PrairieTex, a company few of you have ever heard of, solved that problem by designing a lock that keeps the head from resting on the "landing zone" so well known to older hard drive users, and not releasing it until the drive is up to speed.

The technique is a variation of dynamic loading, which was first used by IBM back in the early 1950s but abandoned with the introduction of "Winchester" drives that let the head rest directly on the stopped platter when the power is shut off.

Other notebook technologies such as folding motherboards and flat-screen technology are well known, but few understand how a Colorado company advanced the cause of smaller and lighter computers by reverting to a long-dismissed design from mainframe computer drives.

*— John McCormick*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with vastly superior performance are selling for one-third less; nevertheless, if I still had either of these I would happily continue running it because, despite their lower performance, they did everything I need a laptop to do.

Until last summer I was still cautioning people who could wait that notebook prices had yet to bottom out, but today's bottom fishers can find excellent systems priced well below $2,000 complete with hard disks, and some are breaking the $1,500 barrier. So if you need a notebook and today's 386SX systems are fast enough to meet your needs, there is little reason to wait.

While desktop computers are becoming commodity items, if you look around you will see that few complete systems (including display and hard drive) sell for much less than $1,000. This looks to be about the minimum price a computer can sell for and still return a profit to the manufacturer.

The 386SX desktop and notebook computer can be built and sold for about $1,000 to $1,500, and this means that some of the best buys are found in computers based on this chip, even if you only need an 8088-based XT compatible or a 286-based AT system.

At list price, 286s are a bit cheaper than 386SX systems but aren't really priced competitively compared to their lower performance because in under $2,000 computers much of the cost comes from packaging, shipping, documentation, support, advertising, and other items common to all computers, such as disk drives and power supplies.

There are two real reasons to consider a 286-based notebook, besides the fact that many of them are now at close-out prices, and that is that the slower, less powerful chip uses less power which may mean longer battery life. Even this is becoming less true as more sophisticated power management techniques are constantly extending the running time of 386 and 386SX systems.

The other great reason to look at a 286 is the fact that they are rapidly being discontinued and can now be had for a song, as the saying goes, "One bar, and no chorus." Remember that a computer that does what you need is always a good computer, even if there are newer and faster ones on the market.

This is a great time to be shopping for a computer; there are literally dozens to choose from no matter what your specific needs, and prices may never get much lower for the mid-range systems because of that unavoidable pricing floor I mentioned earlier which is caused by overhead that is the same for all computers whether they are 33MHz 486s, AT clones, or 386SX notebooks.

The real problem today is having too many great computers to choose from and nowhere is that a greater problem than among the new crop of 386SX notebooks.

* * *

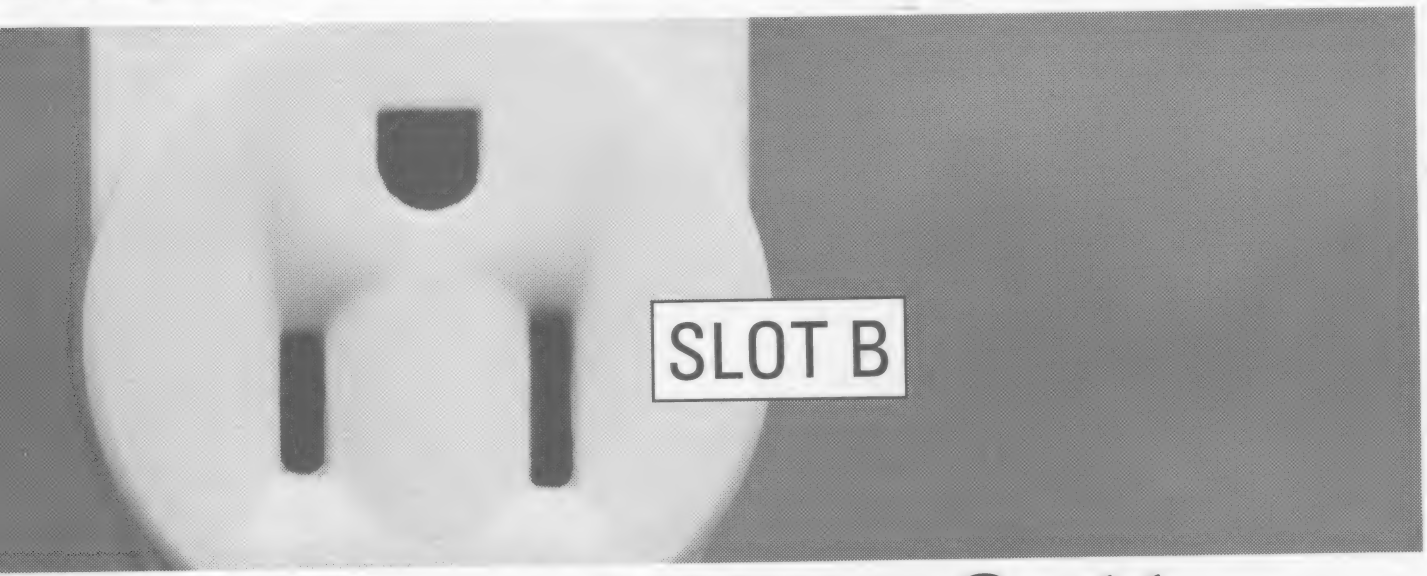
### Accessories

Worried about your portable being a bit too portable? Santa Clara's Inmac (2465 Augustine Dr., Santa Clara, CA 95054, phone 408/727-1970) offers the $30 Laptop Lock complete with steel cable. Feeling a bit left out when desktop users fire up some exotic accessory board? There is no need to be a second-class user with ex-PORT, a $375 to $675 device from Lightek (948 Cherry St., Kent, OH 44240, phone 216/673-5358) that adds a power supply and fan-cooled expansion chassis to your portable's parallel port.

Toshiba, Epson, and Zenith users can obtain a custom expansion chassis that accommodates two full-sized PC boards from Connect Computer (9855 West 78th St., Suite 270, Eden Prairie, MN 55344, phone 612/944-0181) for just a shade less than $500.

Did your notebook maker forget a keyboard port? Check out the $100 Serial Box, from Genovation, Inc. (17741 Mitchell, N. Irvine, CA 92714, phone714/833-3355) which reportedly lets you connect a standard keyboard to a laptop. Alternative pointing devices are a really hot item in these days of Windows 3.0 because it just isn't practical to use a mouse with a notebook computer. Microsoft was the first with its BallPoint, a so-called "mouseball" device with high resolution, but there is also the Logitech TrackMan portable trackball with its one-inch ball and 200dpi resolution.

SEE PAGE 25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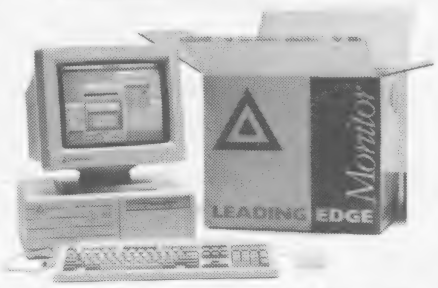


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## 386SX NOTEBOOK PCS

**About This Chart:** The following chart, compiled by John McCormick, lists 44 leading 386SX Notebook PCs, their manufacturers, contact info, vital statistics and suggested retail prices. A few of the vendors listed both manufacture and sell their own notebook PCs either through a storefront or mail-order/direct sales. In those cases, the price listed is not generally available at any further discount. But most of the systems listed here are sold through resellers who discount the suggested list price by as much as 20% to 30%, making the price column more useful as a comparative measure than an actual price list. There are also some companies that include extras not noted in the chart. Altima, for example, includes an internal fax/modem and a carrying case with its notebook PCs. The chart is a good starting point for price and feature comparisons. Keyboard feel, handle, screen legibility, battery life, and service are among the other key factors that should be considered in any notebook PC purchase for which we strongly advise buyers, particularly first timers, to visit your local computer reseller to check out the system before buying.

*— David Needle*

| Company | Location | Phone | Product | Speed (MHz) | Hard Disk (MB) | RAM (MB) | List* Price |
|---|---|---|---|---|---|---|---|
| Acer | San Jose, CA | 408/432-6200 | AnyWhere 1120NX | 20 | 40 | 4 | $2,395 |
| Acma | Fremont, CA | 800/456-1818 | 386SX/20 | 20 | 40 | 1 | $1,795 |
| ALR | Irvine, CA | 714/581-6770 | VIP LS/25 | 25 | 40 | 4 | $3,495 |
| Altima | Concord, CA | 800/356-9990 | LSX | 20 | 40 | 1 | $2,499 |
| | | | LSX | 20 | 60 | 1 | $2,699 |
| | | | LSX | 20 | 60 | 4 | $2,999 |
| Aquiline | Bennington, VT | 802/442-1526 | Jetbook | 20 | 60 | 2 | $1,795 |
| Arche | Fremont, CA | 510/623-8100 | 386SX Notebook | 16 | 20 | 1 | $1,899 |
| AST Research | Irvine, CA | 714/727-4141 | 386SX/25 | 25 | 40 | 2 | $2,395 |
| Chaplet Systems USA | Sunnyvale, CA | 408/732-7950 | NBA 386SX/20 | 20 | 40 | 2 | $2,995 |
| Compaq | Houston, TX | 713/370-0670 | LTE 386s/20 | 20 | 30 | 2 | $3,299 |
| Dell Computer Corp. | Austin, TX | 512/338-4400 | 320N | 20 | 40 | 1 | $2,699 |
| Epson America | Torrance, CA | 310/782-5161 | NB3s | 20 | 20 | 1 | $3,099 |
| Everex | Fremont, CA | 800/992-3839 | Tempo LX/20 | 20 | 40 | 1 | $2,295 |
| | | | Tempo Carrier | 20 | 40 | 2 | $2,795 |
| Fora | San Jose, CA | 408/944-0393 | NBS-386S | 16 | 40 | 1 | $1,795 |
| | | | LP-386SX 70/20 | 20 | 40 | 1 | $3,995 |
| | | | NLB-386S | 20 | 30 | 1 | $2,995 |
| GRiD Systems | Fremont, CA | 510/656-4700 | 1755 Notebook | 20 | 60 | 2 | $3,450 |
| Leading Edge Products | Westborough, MA | 508/836-4800 | N3/SX20 30MB | 20 | 30 | 1 | $2,895 |
| | | | N3/SX20 60MB | 20 | 60 | 1 | $3,195 |
| Librex Computer Systems | San Jose, CA | 408/441-8500 | Librex Notebook | 20 | 20 | 4 | $2,999 |
| | | | Librex Notebook | 20 | 60 | 4 | $3,599 |
| Micronics | Fremont, CA | 800/659-5901 | MPACT | 20 | 60 | 1 | $3,495 |
| NEC | Boxborough, MA | 508/264-8000 | UltraLite III | 20 | 60 | 8 | $3,999 |
| Northgate Computer | Minneapolis, MN | 612/943-8181 | SlimLite | 20 | 40 | 1 | $2,999 |
| Packard Bell | Chatsworth, CA | 818/886-4600 | 386SX Notebook | 16 | 40 | 1 | $1,749 |
| Samsung | San Jose, CA | 408/434-5400 | NoteMaster | 16 | 40 | 1 | $1,999 |
| | | | NoteMaster | 16 | 60 | 1 | $2,199 |
| | | | NoteMaster | 20 | 60 | 2 | $2,299 |
| Tandon | Moorpark, CA | 805/529-8227 | 386SX Notebook | 20 | 30 | 2 | $3,495 |
| Tandy | Fort Worth, TX | 817/390-3011 | 3810 HD | 20 | 60 | 1 | $3,299 |
| Texas Instruments | Austin, TX | 800/527-3500 | Travelmate 3000 | 20 | 20 | 2 | $2,199 |
| | | | 3000 WinSX | 20 | 60 | 4 | $3,199 |
| Toshiba | Irvine, CA | 714/583-3000 | T2000SXe | 20 | 40 | 2 | $3,399 |
| | | | T2200SX | 20 | 40 | 2 | $3,999 |
| | | | T2000SX | 16 | 40 | 1 | $2,849 |
| Total Peripherals | Marlboro, MA | 508/480-8327 | Notebook | 20 | 40 | 2 | $1,999 |
| Twinhead | Milpitas, CA | 408/945-0808 | Supernote SX | 16 | 40 | 2 | $2,795 |
| US Mach | San Francisco, CA | 415/952-5885 | 386SX Notebook | 20 | 40 | 2 | $1,950 |
| | | | 386SX Notebook | 16 | 40 | 2 | $1,650 |
| Zenith Data Systems | Buffalo Grove, IL | 708/808-5000 | MastersPort SX | 20 | 60 | 2 | $3,399 |
| Zeos International | St. Paul, MN | 612/633-4591 | Notebook 386/16 | 16 | 20 | 1 | $1,795 |
| | | | Notebook 386/20 | 20 | 20 | 1 | $1,995 |

*suggested retail price

*The 20MHz AcerAnyWhere 1120NX retails for $2,395 with a 40MB hard drive and 4MB of RAM. The notebook features a dual battery pack, designed for continuous operation. "All notebooks feature removable batteries, but manufacturers never seem to mention that if you try swapping them with an application running you lose your data because the system reboots."*

**FROM PAGE 23**

Microsoft Corp., 1 Microsoft Way, Redmond, WA 98052, phone 206/882-8080. Logitech Inc., 6505 Kaiser Dr., Fremont, CA 94555, phone 415/795-8500. Both of the above should be in most stores, but the ones that follow may be a bit harder to locate.

Appoint's Thumbellina (mouse-ball) and MousePen offer two different control strategies from the same manufacturer. Thumbellina is another of the trackballs, but a very tiny one, while the MousePen has a trackball mounted in a pen so it can be used in the same way as you would use a graphics tablet, only without the tablet. Appoint, 1332 Vendels Circle, Paso Robles, CA 93446, phone 805/239-8976. IBM, wouldn't you know it, has the largest offering of the bunch, with an invertible PS/2 mouse called the IBM PS/2 TrackPoint. By way of comparison, Suncom Technologies (6400 W. Gross Point Rd., Niles, IL 60648, phone 708/647-4040) has put an entire joystick with four buttons in a smaller space, measuring only three inches or more than an inch-and-a-half smaller in the largest dimension than the IBM TrackPoint.

If, as I did, you started wearing eyeglasses before high school, then even the improved laptop screens leave much to be desired, but Massachusetts-based SkiSoft has come to our rescue with both a cursor enlarger called, appropriately enough, No-Squint II, and Eye Relief, a basic word processor that lets you write and edit using LARGE print on your LCD screen. Ken Skier, SkiSoft Publishing, 1644 Massachusetts Ave., Lexington, MA 02173, phone 617/863-1876. Going the other way is Personics' Laptop Ultravision which enhances the cursor but can also squeeze up to 60 lines of text onto a VGA screen. Personics Corp., 63 Great Rd., Maynard, MA 01754, phone 508/897-1575.

If notebook mice are here, can printers be far behind? No, there aren't any laptop laser printers yet, but Kodak has been selling its C-cell powered thermal Diconix 150 for six years now, and Canon even offers a 4 1/2-pound ink-jet printer. Toshiba has 24-pin dot-matrix printers that weigh less than a notebook computer and Computer Products Plus offers a 3 1/2-pound thermal printer, all of which run on batteries. Eastman Kodak Co., 901 Elmgrove Rd., Rochester, NY 14653, phone 800/344-0006. Canon USA Inc., Information Systems Division, One Canon Plaza, Lake Success, NY 11042, phone 516/488-6700. Computer Products Plus Inc., 16351 Gothard St., Huntington Beach, CA 92647, phone 714/847-1799. Toshiba America, 9740 Irvine Blvd., Irvine, CA 92718, phone 800/334-3445.

Traveling Software offers two essential products for notebooks: LapLink III, which lets you move data quickly between portables and office machines, and Battery Watch, which keeps track of the amount of battery power you have left. These two products can be found in most computer stores. There are other ways to link portables to desktops but I don't personally know anyone who uses anything but a version of LapLink. Traveling Software, Inc., 18702 N. Creek Pkwy., Bothell, WA 98011, phone 206/483-8088.

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*John McCormick is a Pennsylvania-based correspondent for Newsbytes and a columnist for* ***Government Computer News.***


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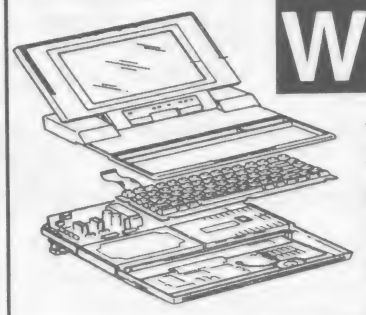

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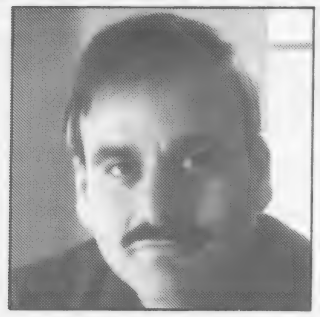

By Nick Anis

# A "Premium" Choice Notebook PC

AST released their first notebook PC at the 1990 Fall Comdex in Las Vegas. The slick machine made quite an impact because of its provocative price of only $2,995 (suggested retail price) — about $1,000 less than competing high-end products. The price for AST's machine was half of what Compaq and AT&T were asking for theirs.

One year later, AST released another notebook PC, and once again, their pricing undercut Compaq and other leading "name brand" manufacturers. The AST Premium Exec family of notebook PCs now offers a choice of three 386SX models: a 20MHz, a 25MHz, and their new 25MHz LCD color system.

Oddly enough, the 20MHz and 25MHz machines sell for the same price. The cost for these microprocessors, which are from two different manufacturers, is about the same, and AST passes on the savings to the consumer. One reason AST continues to offer the slower 20MHz model is that some of their customers have standardized on it. Another is that AST wants to avoid single sourcing critical components — a smart strategy in this sometimes cut-throat business.

## Lots of Choices

There are several system configurations with hard drive sizes of 40-, 60- and 80MB and RAM from 2- to 4MB. Larger hard drives will be offered as they become available. The base 20MHz machine comes with 2MB of RAM and a 40MB hard disk and sells for $2,395. The base 25MHz machine comes with 4MB of RAM and a 60MB hard disk and sells for $2,995. Their new color notebook sells for $4,995 and comes with 4MB of RAM, a 60MB hard disk and a 386SX 25MHz processor. All of these are suggested list prices that virtually all dealers discount.

## Battery Life

The battery life for the AST Premium Exec 386SX/25 I've been using is about 3 1/2 hours. This machine has an elegant battery design with above-average battery life. The battery itself is a small, light, square module that slips easily into the right-hand side of the unit. The design does a good job of balancing battery life and weight. Unlike some notebook manufacturers, AST puts most of the electronics for the power circuitry inside the machine's case — instead of in the battery module. All of the AST notebooks also have a small, lightweight AC adapter that not only runs cool, but shuts itself off automatically so that the unit will not overcharge or overheat.

## Advanced Power-Saving Features

The Premium Exec series has several power-saving features including an automatic rest mode that drops the processor down to a little over 3MHz. The buffered keyboard makes sure key presses aren't lost during the half-second it takes for the processor to revert back to full speed. There is also a hard disk rest mode that takes a little longer, two or three seconds, for the hard disk to come back online. Keystrokes are also buffered when the hard disk is in rest mode. Both rest modes can be adjusted or disabled. As an added safety feature, when the power is turned off all disk writes and processing will be done before the machine shuts itself off.

## Warranty and Service

The AST Premium Exec series comes with a standard one-year warranty. AST also offers an Exec Care Program for $49 (the first year) which gives end users expedited 24-hour replacement if there's a service problem.

A standard part of all of AST's warranty service is to build up the customer's machine to the most current revision level before returning it. Providing the computer is under warranty, this update to the newest design is done at no charge. Nostalgic end users can also specify they want to have their original machine back or they will get a new machine or one that's been refurbished, depending on availability.

Like most manufacturers, AST instructs end users to back up their data before sending the unit in for repair. Most of the service problems for notebooks turn out to be end-user error. Other problems involve improper battery care, and software glitches. There are also a few users who forget their passwords.

*The AST Premium Exec family of notebook PCs starts with the 386SX/25 which comes with 2MB of RAM and a 40MB hard drive and carries a retail price of $2,395.*

### Password Security

The AST machine has a password security feature. If you enable it and forget your password you will have to call AST to get your system unlocked. Unplugging the battery or changing the machine's setup won't unlock it.

### Rigid Construction

The Premium Exec's case is well designed with a rigid construction. I've had several notebooks with cases that use thinner plastics in the past 12 months, and these machines are much more susceptible to damage. The AST unit is one of the most rugged designs I've seen. I would not recommend beta testing from the gorilla in the American Tourister commercial or checking it in with your luggage at the airport, but it should hold up okay under normal use.

When I visited AST's high-tech manufacturing facility in Fountain Valley, Calif. I noticed they were using a new seamless case that fit together nicely. The machine has six indicator lights and a good sensor that detects when the unit is closed but still left on. The built-in 3 1/2-inch floppy drive is mounted in the front of unit on the right side. While not a big deal, this design could come in handy in an airplane window seat or when sitting next to someone like my otherwise accommodating wife, Patty, who is always complaining to me to keep off her arm rest or her snack tray.

The diagonal screen size for the Premium Exec is 8 1/2 inches. Some notebooks have 9 1/2-inch screens but these machines are larger, heaver, and often use more power. AST chose this screen for its outstanding contrast. Bigger isn't always better — at least that's what I've been telling Patty about her engagement ring.

The hard drives used are low-profile IDE 2 1/2-inch units. These skinny drives are fast and quiet and take very little power to operate.

You can buy AST's line of notebooks from the same huge network of dealers who sell their desktops. The consumer retail stores carry the AST Advantage line while computer specialty stores carry the Premium Exec line.

The two monochrome Premium Exec machines have a built-in SVGA port, but like most notebooks, they require the user to disable the LCD display in order to use an external VGA display. AST's color notebook supports simultaneous display of LCD and external VGA. This feature is expected to be phased into the rest of the product line as the video chips with this support become available.

### Made in the USA

Overall I have to give the Premium Exec series of notebooks an excellent grade for design, quality, service, and price. The notebook PC market is a crowded one. It's nice to see a U.S.-based manufacturer offering such advanced technology including their own surface mounting manufacturing facilities. From the advanced design, manufacturing, and exhaustive testing I saw, it's clear to me that AST is a company to keep an eye on for 1992.

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*Nick Anis is a freelance writer and co-author of several best-selling computer books, including* ***Dvorak's Guide to PC Telecommunications, Glossbrenner's Complete Hard Disk Handbook, Dr. File Finder's Guide to Shareware, Dvorak's Guide to DOS and PC Performance and The PC User's Guide.*** *Write to him at User to User, 1125 Bramford Court, Diamond Bar, CA 91765, or MCI Mail ID 389-1702, NANIS, or via his bulletin board at 714/396-0014.*

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By Lawrence J. Magid

# Lightweight and Speedy

## *Toshiba's T2200SX Notebook PC*

I've used lots of laptops but, with the exception of the Apple PowerBook 170, I've yet to find one as nice as the Toshiba T2200SX. It's slim, lightweight and relatively fast. Its supertwist LCD display is better than most others on the market. The only flaw I could find is with the optional internal modem. More on that later.

Let's start with the basics. The T2200SX is one of the thinnest and lightest 386SX notebooks on the market. It weighs only 5.5 pounds yet comes with a 20MHz 386SX CPU, at least 2MB of RAM (expandable to 10MB), a 1.44MB internal floppy drive and either a 40- or 60MB hard disk.

The machine measures 11.7 x 8.3 x 1.6 inches. At 13 1/2 ounces, the machine's AC adapter/charger is one of the smallest and lightest on the market.

The sidelit supertwist LCD display provides 640x480 pixels with VGA resolution using 16 gray scales. The 9 1/2-inch (diagonal) display is a bit larger than that of most notebooks. There is also a port for an external VGA monitor.

There is an 82-key keyboard with dedicated cursor control keys. The Ctrl key is to the left of the A key — a position appreciated by a lot of touch typists.

Ports include a parallel port (which can also function as a port for an optional 5 1/4-inch disk drive), an expansion port of the Toshiba Desk Station IV docking station, and a communications port that can be configured as COM1 or COM2. There is a communications port and a port for a PS/2 mouse. The optional Desk Station IV ($999) has two full-sized 16-bit standard expansion slots, a parallel port, a serial port, a PS/2 mouse port, a VGA monitor port and two 101-key keyboard ports. There is a 5 1/4-inch drive bay and a stand for an external VGA monitor. You slide the 2200SX into the Desk Station IV which disables the ports inside the notebook while giving you access to the ports on the Desk Station IV.

The machine comes with MS-DOS 5.0. It does not come with Windows but is capable of running both Windows 3.0 and the forthcoming Windows 3.1. Toshiba also offers a version of OS/2 and Unix for the laptop.

### Internal Modem Requires External Adapter

The T2200SX has a dedicated slot for the company's optional credit card-sized 2400-baud internal modem with MNP-5 error correction. The modem


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does not have a built-in telephone plug. Instead you insert the phone plug into a small "line adapter module" (LAM) that plugs into the modem card. I usually recommend an internal modem for a portable computer but I'm not impressed by this strategy. Even though the LAM weighs only about an ounce and is quite small, it's still one more thing to carry around and possibly lose or break. It defeats one of the major advantages of having an internal modem. There are several small external portable modems on the market, making me question whether it wouldn't make more sense to skip the Toshiba modem and either spend less money on a portable external 2400-baud modem from Practical Peripherals (Westlake Village, Calif.) or about the same amount on a small external fax/data modem from U.S. Robotics (Skokie, Ill.) or Macronix (San Jose, Calif). Both the U.S. Robotics and Macronix fax/data modems are about the size of a pack of cigarettes and are equally at home on both your desktop and laptop.

The machine comes with a removable rechargeable nickel hydride battery which gave me more than two hours use on a recent coast to coast trip. You can carry extra batteries if you need more time. A pop-up meter functions like a gas gauge, giving you a relative idea as to how much battery power is left.

There are a number of power-saving features including the ability to slow down the CPU to 10MHz, turn off the optional internal modem and have the machine automatically turn off the hard disk or display after a user-specified period of time. You can also set the machine to go into a sleep and resume mode after a specified period of inactivity or when the power is turned off. The machine comes with special driver that allows you to use the sleep mode with Windows.

### Performance

The machine has a fast feel to it, even when running Windows. The benchmarks bear it out. The CPU, according to Norton's System Information program, runs about 12 times faster than an IBM XT. A 33MHz Compaq 386, as a point of reference, runs 34.7 times faster than an XT. The hard disk runs 8.4 times faster than an XT. It's just a hair slower than a 33MHz Compaq 386, according to Norton. Overall, the machine scored a respectable 10.3 on the Norton test.

### Look and Feel

I took the machine on a recent trip to New York and came away extremely impressed with everything except the optional internal modem. The slim design and small footprint made it an ideal traveling companion. It even fit well on my coach cabin tray table with enough room left over for the mouse and a glass of orange juice.

The built-in PS/2 mouse port is a good idea, but it would be even better if the machine was bundled with a well integrated trackball. Toshiba does offer a special "clip" for Microsoft's BallPoint track ball that, according to a Toshiba spokesperson, allows you to close the cover without having to remove the track ball.

The machine isn't cheap. It has a suggested retail price of $3,999 for the basic system with 2MB of RAM and a 40MB hard disk. A unit with a 60-megabyte hard disk costs $4,299. You can buy an additional 2MB of memory for $479. The optional 2400-baud internal data modem costs $459. Prices are subject to dealer discounts.

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*Lawrence J. Magid is a nationally syndicated computer columnist and Silicon Valley-based analyst and writer. He also writes regularly on the Prodigy online service. He can be contacted at P.O. Box 620477, Woodside, CA 94062, or on MCI Mail as "LMagid."*

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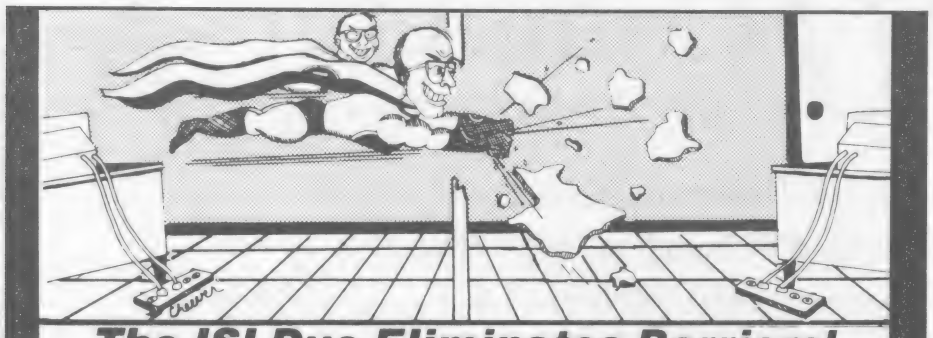

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**NETWORK CONSULTANT**

By Sam Adicoff

# Cabling, the Root of Most Network Evils

## *Part I*

Cabling. The mere mention of the word tends to make even the most ardent LAN professional yawn.

While cabling falls on the mundane side of network operations, the topic bears close scrutiny. After all, somewhere in the neighborhood of 75 percent of all LAN down-time results from a physical cabling problem.

That's the bad news.

The good news is by taking a few preventive steps that address potential cable problems, you can significantly increase the up-time of your network and overall user productivity.

**By taking a few preventive steps, you can significantly increase the up-time of your network and overall user productivity.**

Cabling is the glue that holds your entire network together. While it may be the single most important physical aspect of any LAN, it is also one of the most time-consuming to install and troubleshoot. Before you decide how to install LAN cabling, you should first familiarize yourself with the most popular types of cable: coaxial, shielded twisted pair (STP), and unshielded twisted pair (UTP).

Once the favored Ethernet LAN medium, coaxial cable's popularity continues to wane in favor of UTP. There are a couple of reasons why coaxial cable is fading in popularity. Its linear bus topology makes it difficult to troubleshoot. If a single attached node experiences a snafu and goes down, the entire network goes down. In addition to being more expensive than UTP, coaxial cable is more costly to install because of its thick, unwieldy characteristics. Despite its limitations, coaxial cable remains a viable Ethernet alternative for extremely small LANs confined to a tiny "open" area.

For example, if you want to install a five-node Ethernet LAN with PCs along a common wall, coaxial cable can be an adequate solution. With proper planning, coaxial cable can be laid behind the PCs along the wall's baseboard where it's out of harm's way. This approach also eliminates the cost of purchasing and installing a LAN hub.

Bulky STP wire — the same medium as the IBM Cabling System — is primarily installed in large businesses that have adopted IBM Token Ring. Originally designed to support 4 megabit-per-second (Mb/s) Token Ring, STP wire now supports 10Mb/s Ethernet, 16Mb/s Token Ring, and the 100Mb/s fiber distributed data interface (FDDI) LAN access method. However, the high cost of purchasing and installing STP wire makes it prohibitive for most sites. Customers who want to install STP cabling are likely supporting true-blue IBM environments.

The most popular cable solution and the one that I recommend 90 plus percent of the time is standard UTP wire. Similar to the cabling in structured telephone systems from AT&T and other telecommunications vendors, UTP is a cost-effective solution for businesses anticipating LAN growth. According to International Data Corporation, the Framingham, Massachusetts market research company, UTP will represent 77 percent of all installed LAN cabling nodes by 1994.

As the most widely used LAN cabling media, UTP owes much of its

popularity to low cost, ease of installation, manageability, and support for Ethernet, Token Ring, and Arcnet. UTP wire is typically laid out in the same star topology as the phone system, which means you'll have to do less crystal-ball gazing to figure out how large your LAN will be a few years down the road. To connect nodes, you simply plug a desktop computer into an RJ-45 modular jack receptacle.

From the desktop, UTP wire runs to a LAN hub in your building's phone wiring closet. With all points leading to your LAN hub, the UTP star topology makes it simple to isolate problem nodes without bringing the entire network down. And to accommodate expansion, new LAN hubs are easily installed and interconnected.

Regardless of your choice, make sure that the cable is installed to specification. One of the most common pitfalls involves exceeding the recommended cable length between the hub and a node or in the case of a bus network, the full length of the trunk line. Don't make this mistake. If the cable specification states 300 feet between server and workstation, and you go 400 feet, you're asking for trouble. Also, depend on high-quality cable. For UTP, I recommend 24-gauge solid copper with four pairs of wires. All cable is not created equal, so use a reputable source such as AT&T or Beldon.

As far as cost, installing coaxial and UTP Ethernet can range from $100 to $200 per connection for materials and labor. With UTP, you can add another $100 to $150 per connection for a LAN hub. Of course, other factors can impact cost. For example, if your building or office is under construction, you'll save significant money by pulling phone cable concurrently with your data cable since labor is your greatest cost factor. Installing cabling after you've moved into a site may require special tools and extra labor to "snake" the cables through the walls and ceiling panels which naturally increases labor costs.

Many face a dilemma because they want to save money by installing the cable during site construction, yet they haven't developed a network plan. You can easily sidestep this issue by pulling cable wherever your construction drawings call for a phone. It might be more expensive up front, but you'll be in a position to add workstations inexpensively to the network in the future. As far as the type of cable to use for an undefined network, again, I'd use UTP since it can be used for Token Ring, Arcnet, or Ethernet. Just run the cable in a star configuration with a cable run going from the wiring closet to each potential node location or phone.

The actual installation of the cable can be managed by you or the company installing the network... keeping in mind that your network installer might have cable experts or subcontract out this work. Regardless, the key to success is to make sure that the cable and network installer act as a team. As you would expect, the easiest way to ensure a team approach is to place responsibility for the cable on your network installer. If you later experience a problem, there's no finger-pointing since full responsibility rests on the shoulders of the network installer. While managing the cable installation yourself might save a few bucks, you'll end up playing referee if there's a cable problem down the road. In addition, ask for a lifetime guarantee on the cable installation or at the minimum, make sure the cable installer will return to your site during the LAN installation to address any cable problems.

Before your cable installer begins work, make it clear that you want a well-documented cabling system upon completion. Your installer should document where all cabling is routed — from the precise location of every desktop connection to patch-panel connections in the wiring closet. All cables and connectors should be numbered and labeled at both ends for easy identification. Also, a wiring diagram should be maintained in the wiring closet.

*Next time, we'll look at some trouble-shooting techniques that will address cabling problems that can occur after the installation is complete.*

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*Sam Adicoff is president of PC Edge, a San Jose, Calif.-based company that specializes in computer networks.*

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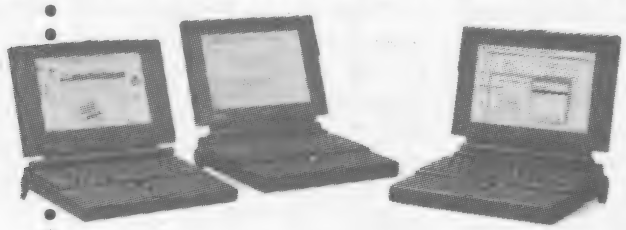

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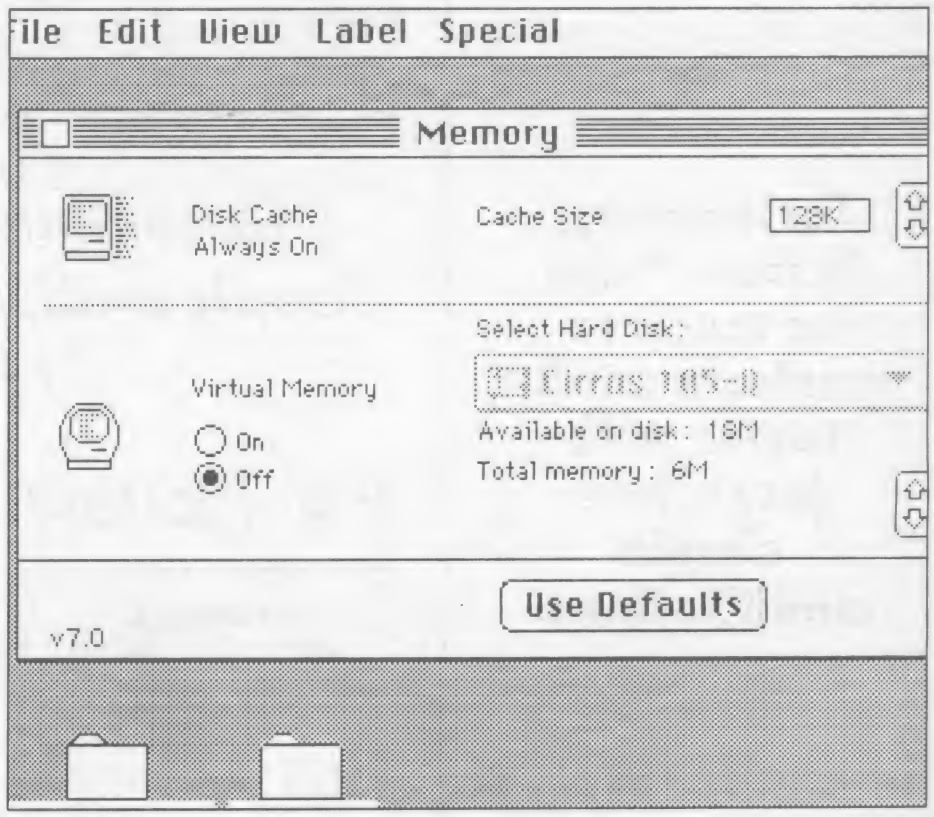
# Maximum Speed From System 7

By Randy B. Singer




*Increasing the disk cache size in the Memory control panel can help speed up System 7.*

System 7 is here and as with any major system upgrade there have been the usual share of problems. The biggest problem that people have experienced is that System 7 is slower than past systems. It is so slow that it can be the cause of endless frustration on an unaccelerated Plus or SE. Fortunately, System 7 can be made to perform much faster with just a few simple modifications.

### Disabling TrueType

Probably the first thing that most people will notice runs slower under System 7 is word processing programs. The reason for this is that System 7 includes TrueType. TrueType is Apple's outline font technology for automatically scaling fonts on the Mac's screen which enables you to print beautiful fonts of any size, even on a non-PostScript printer (e.g. an ImageWriter or DeskWriter). It is the equivalent of, and can take the place of, Adobe's ATM, though the technique used is not exactly the same, and they both use only their own proprietary font types. For those who ran ATM while using System 6.0x, they know that ATM slowed down their word processing programs significantly. Well, TrueType extracts the same speed penalty as ATM. Considering the improvement in the appearance of fonts, both on-screen and when printing, the tradeoff in speed may be forgivable.

But if you do not want your work slowed down, you can disable TrueType. Unlike ATM, which could just be turned off in the Control Panel, TrueType has no on/off feature. However, if you don't have any TrueType fonts installed in your System, System 7 will just use the bit-mapped fonts that are installed and will scale them using QuickDraw if the proper size is not installed. (Bit-mapped fonts

are the ones that have only one letter "A" on their icons and that have a font size after their names, e.g. Times 12. TrueType fonts are the ones that have several letter "A"s of different sizes on their icons and no font size in their names.) If you have just the bit-mapped fonts and sizes that you will be using in a given document installed, and have no TrueType fonts installed, this setup will be totally satisfactory and will yield a noticeable increase in the performance of your word processor.

What I suggest that you do, if you want to achieve the maximum possible speed in your word processor under System 7, is to create a folder called something like "System 7 fonts" on your desktop and drag all of your TrueType fonts out of the System and into this folder. This can be done by

**Fortunately, System 7 can be made to perform much faster with just a few simple modifications.**

opening up your System Folder, locating the System and double-clicking on it. Leave only the particular bit-mapped fonts, in the sizes that you will be using in any particular document, in the System. Drag *all* of the TrueType fonts out, into your "System 7 fonts" folder. TrueType will now be disabled, but the fonts that you will be using will still be displayed perfectly on your screen in your word processor.

When you want to use TrueType fonts, and are willing to deal with the speed penalty, you can simply drag any TrueType fonts from your "System 7 fonts" folder to the System Folder to reinstall them quickly and easily. For instance, you might wish to install your TrueType fonts after you have finished a document and just before you print the document on a non-PostScript printer.

Aside from the speed difference caused by disabling TrueType, there are several configurable settings within the Finder of System 7 that you can adjust which can significantly affect the speed of the Finder.

### Miscellaneous Settings

Make sure that you have "Calculate folder sizes" turned off in the "Views" control panel. The computational time required to calculate the size of each folder slows things down considerably.

Don't run virtual memory unless you need to (that is, don't use it unless you are running several large programs simultaneously and don't have enough RAM installed to pull it off). Turn it off in the Memory control panel. Virtual memory utilizes your hard disk as if it were extra RAM. Retrieving information from your hard disk is much slower than retrieving it from RAM.

Finally, turn off "File sharing" if you are not really using it. To do this you open the "Sharing Setup" control panel and click "Stop" in the File Sharing area. Then simply close the Sharing Setup control panel.

### Setting The Disk Cache

Another hint is to increase the disk cache (RAM cache) size to as large as your available RAM will allow and still let you run all the applications that you wish to run at a given time. The word is that under System 7 you don't reach a point where you can no longer get a return using larger RAM cache settings, as you did in System 6. Or at least that point is much higher. You can set the disk cache in the Memory control panel. I have found that a setting of 512K works nicely. Don't forget to restart after resetting the disk cache, since in System 7 the new setting doesn't take effect until after you restart.

SEE NEXT PAGE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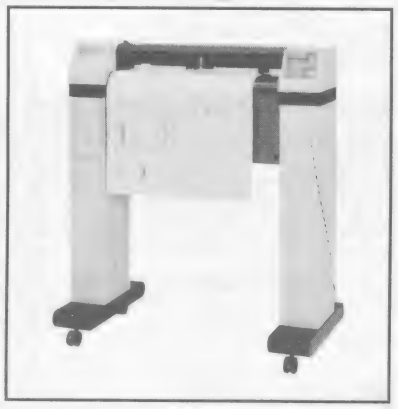

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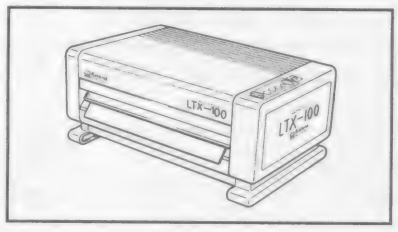


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FROM PREVIOUS PAGE

### Setting The Finder Partition

There are reports that increasing your Finder partition (Application memory size) will speed the Finder up. To do this you have to boot up under System 6.0.x using a startup floppy. Select the Finder in the System Folder on your hard disk by clicking on it once and then choose "Get Info" from the "File" menu. You can then type in the number you want in the box that says "Application memory size." It is necessary to boot from a floppy with System 6.0x, because under System 7 you can't change even a non-active Finder partition.

Another method of changing the Finder partition that has been suggested is to make a copy of Finder 7 and then go into the copy with ResEdit and find the size resource. You can then type in the amount of RAM you want to give the Finder. Close ResEdit, and substitute the new Finder for the old one. (But keep the old Finder in a separate folder until you are sure that the new Finder works correctly. If it doesn't, you may have to restart using your startup floppy and reinstall the old Finder.) Restart your Macintosh to make the change take effect. (ResEdit is a resource editor from Apple. The latest version is 2.1. You can try getting it from the Apple Programmers and Developers Association [APDA], 800/282-2732 or 408/562-3910.)

The default Finder size is 295K. It's been reported that a setting of 330K does the trick, 350K if using a color Mac or running on a network. Personally, with my accelerated Plus, it took a setting of 410K to get a worthwhile improvement. I suggest that you experiment and find the setting that works best for your setup.

### Speeding Up The Renaming Of Icons

After you have used System 7 for a short while you might notice that renaming icons on the desktop is very sluggish compared to how it was under System 6.0x. This problem is easy to remedy. Make a *copy* of the Finder and put it on the desktop (don't perform this operation on the original — save the original in a separate folder in case you make a mistake or don't like this change). Open ResEdit, choose Open from the file menu and select the copy of the Finder that you have made. Open up the CODE resource by double-clicking on its icon, then open up CODE ID 11 by double-clicking on it. Go to location A58 by choosing "find offset" in the "Find" menu and typing in A58 and clicking on the "find" button. At this location change the hex code 5DC0 to 50C0. Quit ResEdit, and when you are asked if you want to save any changes, save them. This easy change will completely eliminate any delay in the renaming of icons.

### Eliminating Zooming Rectangles

Another minor annoyance to some that will slow you down under System 7 is the graphic zooming of the rectangles that occurs whenever you open a program or a new window under System 7. The Mac's drawing of these rectangles on the screen before actually opening the new window or program takes up time and hence delays your work. This can be totally eliminated, simply, with ResEdit. There is a text file that explains exactly how to eliminate these zooming rectangles, with illustrations, and it is available from your local user groups and bulletin boards. It is called Finder ZoomRect Patch, and it is written by Danny Brewer of Farallon Computing (Emeryville, Calif.). Basically, you are instructed to use ResEdit to go into a copy of the Finder, choose the CODE resource, select CODE ID 4, find offset 0078, and change the hex 48E7 1F38 to 6000 00E6 and then save your changes to the Finder copy and restart after replacing the original Finder with the copy (don't forget to save the original in case the new version doesn't work or you don't like the results).

All of the preceding changes ought to get you going close to the speed you were going under System 6.0x while using the myriad of INITs (now called system extensions) that gave you the functionality that comes standard with System 7.

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*Randy B. Singer is a lawyer in the San Francisco Bay Area. He does business law, computer law, and Macintosh consulting. He can be reached at 788 21st Avenue, San Francisco, CA 94121; 415/668-5445.*


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# MACUPDATE

## New Pricing Strategy for Bitstream Typefaces

Bitstream Inc. (Cambridge, Mass.) today announced new pricing and purchasing policies for the Bitstream Typeface Library (BTL) for the Macintosh. Bitstream has reduced the list price for its typefaces by an average of 28 percent. A four-weight grouping of typefaces that was $180 is now $129. In addition, users will no longer be required to make a minimum purchase of four typefaces. The minimum order is now one "suitcase" (a suitcase can contain from one to four typefaces). Users can now purchase single or multi-weight typefaces and mix and match as they please, as long as suitcase groupings are not broken.

BTL typefaces are available directly from Bitstream by calling 617/497-6222. Bitstream custom manufactures and ships each order. The new suggested list pricing is as follows: single faces, $50; two faces, $69; three faces, $99; four faces, $129. Bitstream also offers volume discounts and flexible site licensing options. The new pricing is effective immediately. The complete Bitstream Typeface Library is available on floppy disks or on a hard disks, as well as on the new Bitstream Type Treasury CD.

## Fractal Design Painter

Fractal Design Corporation (Aptos, Calif.) has begun shipping Fractal Design Painter, a natural-media painting program for the Macintosh.

Painter simulates the tools and textures of natural media, allowing the user to paint, sketch and design. With Painter the eye actually sees the striated surface of oil paint, the gossamer delicacy of watercolor, the nubby richness of charcoal and the lush complexion of pastels, the company claims. Painter can be used to create original artwork or to apply natural-media effects to other artwork, including scanned images.

According to the company, the "brushes" — as all the drawing and painting tools are called in Painter — perform on the computer screen as their natural-media cousins would on canvas, drawing board or watercolor paper. The brushes may be customized in many ways, giving the user numerous variations on original strokes.

Painter supports RIFF, TIFF, PICT, and Photoshop image formats. Painter images can be transferred into all the other formats supported by ColorStudio and Photoshop when exported to those programs. Painter works with the Wacom pressure-sensitive stylus, the company says.

Painter retails for $299 and is available by calling 408/688-8800.

## Apple Demos Mac With Advanced Speech Recognition

Apple Computer (Cupertino, Calif.) President John Sculley demonstrated a prototype version of a Macintosh that could accept and interpret verbal commands, at the Technology, Entertainment and Design (TED) conference in Monterey, California.

Though voice recognition products have been available for personal computers for some time, they require software be trained to each user's voice and have a limited number of commands that can be performed. The voice recognition system Sculley demonstrated was able to act on commands from different people and had a larger vocabulary than previous systems. The Macintosh was also able to give verbal responses.

Sculley made the connection between Personal Digital Assistants (PDAs) Apple plans as consumer products and the voice technology by saying voice recognition would be a natural way to interface with products too small for a keyboard or pen user interface.

Cook suggested other consumer products that might benefit from voice recognition technology could be video cassette recorders (VCRs). While Cook called programming the average VCR the "Great American Hurdle," he added that a voice recognition interface for programming the VCR might be the best way to handle the task.

While Sculley sees technological devices, now segmented, coming together in a "Grand Collision," voice recognition is considered by some to be the most important addition to current computer technology. Peter Norton, speaking at the Los Angeles Computer Society this month, said voice recognition will be as big a change in technology as the advent of the computer itself.

Apple representative John Cook said the company is in part doing the demonstrations to interest third parties, such as developers, and Apple is not sure exactly what direction the technology will take.

*— Linda Rohrbough, Newsbytes*


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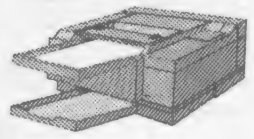
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# CALENDAR

***Meeting times and locations may change at the last minute; call first for confirmation.***

*We welcome notices of upcoming events for our Calendar. Notices must be received by the second Friday of the month prior to publication. Please mail information to: Calendar, Boston Computer Currents, 4 Chrysler Road, Natick, MA 01760. Or send your notice via MCI Mail to "MZIENTARA." Or fax to 617/593-2682.*

Please Note: Boston Computer Society (BCS) listings are courtesy of the BCS. BCS events are for members only; non-members are invited to attend one meeting before joining the Society. BCS headquarters are at One Kendall Square, Cambridge, MA 02139. Telephone 617/252-0600.

## March 7

*Southern New Hampshire Area Computer Show & Fleamarket*

More than 150 tables of computers and computer-related products. Door prizes will include computer systems and accessories. To be held at the Clarion Somerset Hotel off Exit 8 of the Everett Turnpike, Nashua, N.H. Hours: 9 a.m. to 3:30 p.m. Adults, $8. Children under 12, free. Call 800/637-2204 for more information.

## March 9

*The Macintosh Survival Course*

A two-day (March 9-10) workshop on troubleshooting and data recovery techniques for the Macintosh. Presented by Data-Tech Institute (Clifton, N.J.). To be held at The Lenox Hotel, 710 Boylston Street, Boston. Fee: $795. Call 201/478-5400.

## March 10

*Pen-Based Computing*

A half-day (9 a.m. to 12 noon) workshop/seminar offered by GRiD Systems Corp., designed for beginners. Limited seating; reservations required. To be held at GRiD Systems Center, One Apple Hill, Rt. 9 East at Loehmann's Village, Natick, Mass. Call 508/651-9904.

## March 11

*BCS Macintosh*

"Covering the Desktop Publishing Waterfront." Presenting a range of DTP applications. On the high end, Frame Technology shows Framemaker, a system for structured documents with a host of advanced features. Timeworks shows Publish It Easy!, an inexpensive, multi-platform application with built-in database tools. 7 p.m., MIT, Building E51, Room 329, 50 Wadsworth Street, Cambridge, Mass. Call the BCS-Mac Office at 617/625-7080.

*Ventura Users of Greater Boston (VUGB)*

"Ventura Publisher for Windows, Version 4.0." Monthly meeting to be held at 6:45 p.m. at Building 1218, Hanscom Air Force Base. Newcomers should call for details on how to enter Hanscom AFB. Call 617/275-3592.

## March 18

*Data Processing Management Association (DPMA)*

"Sexual Harassment in the Workplace." Bonita Cox from *Computerworld* will speak at the Boston Chapter monthly dinner meeting. Social hour, 5:30 p.m.; dinner, 6:30; speaker, 7:30. To be held at Phillips Old Colony House, 780 Morrissey Blvd., Dorchester, Mass. For reservations or more information, call Sue Yule at 617/723-6111.

## March 19

*Society for Information Management*

Boston Chapter luncheon meeting featuring speaker Richard Koeller, vice president, Information Technology, Whirlpool Corporation. 12 noon to 2 p.m. To be held at Anthony's Pier 4, Boston. Call 617/237-1570 for fees and reservations.

## March 25

*BCS General Meeting*

"Microsoft's Magical Mystery Product!" Hosted by BCS-Mac, this meeting features a new product announcement from Microsoft — a new version of software supporting both the Macintosh and Windows operating environments. 7:30 p.m., New England Life Hall, 225 Clarendon Street, Boston.

## March 26

*Training the Trainer*

A one-day seminar offered by Fred Pryor Seminars (Shawnee Mission, Kansas), aimed at professional trainers or managers who train. Other dates and locations available. Fee: $195. Call 800/255-6139.

## March 31

*Distributed Object Computing*

"Applying Distributed Computing and Object-Oriented Technologies to Meet Business Needs in the '90s." Patricia Seybold's 1992 Technology Forum, a three-day (March 31-April 2) event to discuss how end users can overcome barriers to applying the latest technologies. To be held in Boston. Fee: $895. For details, call 617/742-5200 or 800/826-2424.

# The Boston Computer Exchange

**The Other Shoe Falls....**

The MacMarket took some modest knocks this week to bring more trading prices in line with the realistic expectations of MacBuyers. The proverbial man-in-the-street knows that Apple dropped their prices. It is the subject of people's conversations talking across drugstore counters and in supermarkets. Apple's price reductions mean the core models come into line with the budgets of a larger population. More folks who can afford one are making the decision that it's time to own a computer. And at this moment, they are deciding that the Macintosh computers are excellent choices. The secondary market is still dealing with the ripples of the Apple price reductions.

**286 Technology in The Market**

While the 386s have taken most of the industry attention, there is a stable base of interest in 286 computers. A remarkably large number of applications are really limited by the human activity, not the processor speed. For all of those users, the 286, dedicated to a single application, is a machine that performs the job. A majority of writers express their preference for a 286 and as the prices have been falling, they make a machine of choice for the low-end user. The Toshiba T-1600 was up $50 to close at $700, and the PS/2 Model 50 was a major loser dropping $200 to close at $750

**Anniversary Renovation!**

The Boston Computer Exchange will celebrate its 10th anniversary in business on March 4, 1992. In honor of the passing of its first decade, the BoCoEx Index staff will be presenting a new component of the report that appears in these pages. The changes in the complexion of the market have made a processor-based report of closing prices more valuable to readers than the current format with maker and model details. The original material will continue to be presented as it appears, and in addition there will be a summary of closing prices based on the processor type. The proliferation of new manufacturers, the homogenization of the model choices and the appearance of dozens of brands of essentially comparable computers has led BoCoEx to summarize the results of trading in a compressed format. We believe that it will be easier for readers to find a fair market value for their computers based on this simplified report.

The following prices are for the week ending February 21, 1992.

## The BoCoEx Index Of Used Computer Prices

| Machine | ($)Close | ($)Ask | ($)Bid |
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| IBM AT 239 20MB | 550 | 650 | 175 |
| IBM PS/2 Model 50Z 30MB | 900 | 1100 | 325 |
| IBM PS/2 Model 70 120MB | 2650 | 2800 | 1200 |
| Compaq Portable 286 20MB | 900 | 1000 | 250 |
| Compaq Portable 386 40MB | 1600 | 1600 | 900 |
| Compaq SLT-286 40MB | 1200 | 1300 | 500 |
| Compaq LTE-286 40MB | 950 | 1000 | 500 |
| Compaq Deskpro 286e 40MB | 650 | 1000 | 325 |
| Compaq Deskpro 386/20 60MB | 2000 | 2200 | 1100 |
| NEC PowerMate SX+ 40MB | 1250 | 1350 | 1200 |
| NEC PowerMate SX+ 80MB | 1350 | 1400 | 1250 |
| Zenith SupersPort-286 20MB | 600 | 600 | 250 |
| Zenith SupersPort-286 40MB | 800 | 800 | 450 |
| Macintosh SE 40MB | 950 | 1050 | 650 |
| Macintosh SE/30 40MB | 1450 | 1550 | 1200 |
| Macintosh SE/30 80MB | 2000 | 2100 | 1400 |
| Macintosh IIx 80MB | 3000 | 3250 | 2000 |
| Macintosh IIcx 40MB | 1900 | 2300 | 1800 |
| Macintosh IIcx 80MB | 2950 | 3000 | 2000 |
| Apple ImageWriter II | 250 | 350 | 100 |
| Apple LaserWriter IINT | 1600 | 1750 | 1200 |
| HP LaserJet | 425 | 500 | 150 |
| HP LaserJet II | 850 | 950 | 550 |
| Toshiba T-1200HB 20MB | 750 | 900 | 500 |
| Toshiba T-1600 20MB | 700 | 750 | 400 |
| Toshiba T-3100 20MB | 900 | 1050 | 500 |
| Toshiba T-3100 SX 40MB | 1575 | 1750 | 1500 |
| Toshiba T-5100 40MB | 1400 | 1700 | 900 |

BoCoEx Index prices are based on complete systems with keyboard, monochrome monitor and adapter, less the value of any software or peripherals. Boston Computer Exchange can be reached at 617/542-4414; Buyer's Hotline, 800/262-6399; fax, 617/542-8849. BoCoEx Index is available on Fax Yourself Information, 617/542-2345 extension 300.

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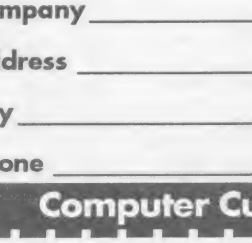

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2 For Sale
3 DTP Hardware
4 Rent/Lease
5 Trade
6 Wanted
7 SOFTWARE
8 For Sale
9 Trade
10 Shareware
11 Wanted
12 MULTI MEDIA
13 ACCESSORIES
14 Cabling
15 Furniture
16 Supplies
17 BUSINESS/FINANCE
18 Business Opportunities
19 Business Plans
20 International
21 Leasing
22 Stock Market
23 COMMERCIAL PROPERTY
24 Office Rental
25 CONSULTANTS
26 Accounting Systems
27 Engineering
28 General
29 Hardware
30 Conversions
31 Lan
32 Programmers
33 Sales/Mktg
34 Software
35 Systems
36 Technical Illustration
37 Technical Writing
38 Training
39 Wanted
40 EDUCATION
41 Video
42 EMPLOYMENT
43 Job Opportunities
44 Employment Wanted
45 SERVICES
46 Cartridge Refill
47 Computer Upgrade
48 Disk Conversion
49 Disk Repair
50 Health Care
51 Insurance
52 Legal
53 Mailing Lists
54 Public Relations
55 Repair
56 Slides
57 Testing
58 Wanted
59 Word Processing
60 DESKTOP PUBLISHING
61 Design Studios
62 Copy Centers
63 Optical Scanning
64 Plotting
65 Printing
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02 ☐ Software development
03 ☐ Manufacturing other
04 ☐ Agriculture, mining, construction
05 ☐ Transportation
06 ☐ Communications
07 ☐ Utilities
08 ☐ Computer related retailer
09 ☐ Non-computer related retailer
10 ☐ Finance, banking, insurance
11 ☐ Real estate
12 ☐ Health, medical service
13 ☐ Legal
14 ☐ Education
15 ☐ Data processing, computer service
16 ☐ Government
17 ☐ Consultant
18 ☐ Wholesale/Distributor
19 ☐ Research/Development
20 ☐ Engineering/Architecture
21 ☐ Other business services
22 ☐ Advertising
23 ☐ Sales/Marketing
24 ☐ Personnel Placement
25 ☐ Entertainment
26 ☐ Other *(please specify)* _____

**22 Title** ***(check one only)***
01 ☐ Chairman/Pres./Owner/Partner
02 ☐ VP—All
03 ☐ Controller/Treasurer
04 ☐ Director
05 ☐ General Manager
06 ☐ Business Manager
07 ☐ Project Manager Chief/Group Leader
08 ☐ Prod./Merch. Manager
09 ☐ Manager/Supervisor not listed above
10 ☐ Data Base Administrator
11 ☐ Other Administrator
12 ☐ Physician
13 ☐ Accountant
14 ☐ Attorney
15 ☐ Consultant/Advisor
16 ☐ Bus. Microcomputer Specialist
17 ☐ Systems Analyst
18 ☐ Writer
19 ☐ Coordinator
20 ☐ Programmer
21 ☐ Engineer
22 ☐ Educator
23 ☐ Representative
24 ☐ Other (please specify) _____

**25 Company Size (check one only)**
A ☐ Under 10 employees
B ☐ 10-24
C ☐ 25-99
D ☐ 100-249
E ☐ 250-999
F ☐ 1000-2499
G ☐ 2500-4999
H ☐ Over 5000

**26 Department (check one only)**
01 ☐ Accounting
02 ☐ Administration Management
03 ☐ Communications
04 ☐ Consulting
05 ☐ EDP/MIS
06 ☐ Education/Training
07 ☐ Engineering
08 ☐ Finance
09 ☐ Marketing
10 ☐ Operations
11 ☐ Personnel
12 ☐ Production/Plant
13 ☐ Purchasing
14 ☐ Research & Development
15 ☐ Sales
16 ☐ Other *(please specify)* _____

**Does your firm have personal computers?**
☐ Yes: If yes, please indicate quantities below. Complete both columns.
☐ No

| | | **34: Number currently owned:** | **35: Number plan to purchase within next 12 months:** |
|---|---|---|---|
| A | PC (286) Compatible | _____ | _____ |
| B | PC (386) Compatible | _____ | _____ |
| C | PC (486) Compatible | _____ | _____ |
| D | Notebook PC | _____ | _____ |
| E | Macintosh Classic, or SE | _____ | _____ |
| F | Macintosh LC | _____ | _____ |
| G | Macintosh IIcx, IIsi, IIci | _____ | _____ |
| H | Macintosh IIfx | _____ | _____ |
| I | Macintosh Powerbook | _____ | _____ |
| J | Amiga | _____ | _____ |
| K | NeXT Workstation | _____ | _____ |
| L | Sun SPARC system | _____ | _____ |
| M | Other *(Please Specify)* | _____ | _____ |

**30 Please estimate your department's budget for computer hardware, software and supplies for the next 12 months:**
A ☐ Over $500,000
B ☐ 250,000 to 499,999
C ☐ 100,000 to 249,999
D ☐ 50,000 to 99,999
E ☐ 25,000 to 49,999
F ☐ 10,000 to 24,999
G ☐ Under 10,000

**31 Through what channels will your department purchase its hardware software and supplies?** ***(Check as many as apply)***
A ☐ Computer Retail Store
B ☐ Distributor/Wholesaler
C ☐ Value Added Reseller
D ☐ Consultant
E ☐ Mail Order
F ☐ Manufacturer
G ☐ Other _____

**In which of the following ways are you yourself involved with personal computers, accessories and supplies?**
☐ Use them
☐ Recommend them
☐ Establish specifications
☐ Approve purchase
☐ Acquire them
☐ Evaluate or select suppliers
☐ Train people to use
☐ Sell them
☐ Develop or manufacture
☐ No involvement
☐ Other involvement *(please specify)* _____

**32 For how many personal computers or microcomputer systems do you have this involvement?** ***(Check one only.)***
A ☐ 1-3
B ☐ 4-9
C ☐ 10-24
D ☐ 25-49
E ☐ 50-99
F ☐ 100 or more

*PLEASE BE SURE TO SIGN YOUR NAME AND INDICATE YOUR TITLE*

Your signature _____
Print your name _____
Title _____
Date _____
Company _____
Address _____
City/State/Zip _____

Have you answered all questions?

# ADVERTISER INDEX


Applications System Group ... 11
Aquiline, Inc. ... 26
Arise Computer ... 27
Atlas Computer ... 13
Bontronics ... 16
Boston Computer Exchange ... 8
Cad One Computer Design ... 29
Computer Marketplace ... 14
Computers a la Carte ... 34
Computers Etc. of New Hampshire ... 26
Computers, Etc. Superstore ... 2
CX Computer Exchange ... 16
Dataware Products ... 28
Deerfield Data Systems ... 26
Demosource ... 37
DTK Computer, Inc. ... 44
DXM Computer Parts ... 36
Egghead Discount Software ... 19
Engineering Synthesis ... 8
Excell Computer Wholesale ... 43
FSG Computer Center ... 31
Gertje Associates ... 13
Gigabyte Computer Stores ... 30
Harvard Info Systems ... 18, 26
Informatics Systems ... 19
International Sales & Marketing ... 36
ISI ... 30
KGP Productions ... 5
L & W Microsystems ... 15
Laptop Superstore ... 25
Laptops ... 25
Laser Two ... 13
Logic Computer Solutions ... 7
Macro Minder ... 32
Metrowest Computers ... 32
Micro National ... 35, 37
Micro-Mania ... 25
MicroAge of Burlington ... 32
New Pro ... 9
Northeast Color Research ... 35
Northeastern University ... 12
Northern Computer Shows ... 36
NPC Computer Corp. ... 3
Online Computer Sales ... 8
P.S. Personal Computers ... 40
PC Quick Rent ... 14
PCs Compleat ... 22, 23
Personal Computers Plus ... 27
Progenius ... 27
Rent-A-PC ... 10
Roland Digital ... 33
Softac Corporation ... 27
Synertek ... 10
Talent Available ... 42
The Mac Shop ... 35
Triplett & Company ... 16
Westcon ... 30
WJMK ... 17
Women, Technology & Power ... 42
Worldnet Microsystems ... 42
Xinergy Microsystems ... 15
Zaki Corporation ... 11
Ziff Technologies ... 16


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By Lincoln Spector

# Chips Ahoy!

"Potomkin!" roared Mr. Greenway over the telephone. "Get in here!" Sam Potomkin sighed, tightened his tie, saved his work to disk, and went into his boss's office.

"It's that lousy 386/33 you bought me last year," complained Greenway as soon as Sam came through the door. "You told me it was the latest thing! Latest thing? I could reject a proposal in the time it takes that computer to load Windows!"

Knowing Greenway's way with other people's ideas, Sam could well believe it. He smiled weakly. "It loads Windows faster than my sys..."

"And AutoCAD runs like molasses," Greenway added. Sam wondered why a bank manager needed AutoCAD, but he didn't press the point.

"Look," Greenway said with a voice that would have sounded calm and reassuring if it had been believable, "I don't need a 50-megahertz 486, but I would like something close."

As Sam left the office, Greenway shouted after him. "And don't spend too much money!"

* * *

Later that day, Sam called the See Pea You Klassic Koffee and Komputer Shoppe and asked what they had that was faster than a 33MHz 386.

"That's a matter of some controversy," replied the owner. "Most people would agree that a 386/40 is faster than a 386/33, but that doesn't mean they'd actually buy one. Then there's the 20-megahertz 486SX, which may or may not be faster."

"What do the tests show?" Sam asked.

"Total bias. Actually, what you'll get out of a 486SX depends on what you're actually doing with it. If you're running a thirty-two-bit operating system like OS/2 2.0, Windows NT, or any of those others that aren't out yet, the 486SX is a real fast processor — so long as you avoid math, that is. On the other hand, it won't make a bit of difference if you're using your computer to defragment your hard disk."

"What about Windows?"

"An absolute necessity. Without it, everyone would still be using the computers I sold them two years ago."

"No, I mean what kind of computer would you recommend for running Windows."

"Have you considered a 486/50?"

"No," Sam answered.

"Neither have I — it's still too slow for the job. How do you feel about buying non-Intel CPUs?"

"I don't know. Are they safe?"

"Only if you take them with plenty of water. Now if you want just a little oomph, AMD has a 40-megahertz 386, which is noticeably faster than a 33-megahertz, especially if you use a stopwatch. But if you're willing to wait a month, I should have some new computers in using Chip Upgrade Systems' new 42-megahertz chip."

"Give Mr. Greenway a good CUS, huh?" Sam considered this for a moment. "No, I don't think he'll wait."

"Well, of course, I could sell you something with a 30-megahertz 486 OX today. It's a brand-new chip, a complete 486 with the central processor disabled."

"Sounds perfect for Greenway."

* * *

And sure enough, Mr. Greenway was happy with his new toy for a full three weeks. Then...

"It's that OX," he complained as soon as Sam entered the office. "I'm using JustdeType, and it slows everything down to the speed of a foreign movie. Get me something faster."

"Mr. Greenway," Sam interjected, trying to sum up some courage as he spoke, "I don't think Accounting will be too happy if you get another computer right now."

"Really? We can always lower payroll expenses."

"You'll have your new computer before the week's out."

* * *

"He doesn't like the OX, eh?" asked the Komputer Shoppe proprietor. "Doesn't surprise me; it's an out-of-date CPU."

"What? Already?"

"Hey, c'mon; I sold it to you last month! If your boss needs something new, how about one of Binary Silicon's incredibly fast 586 clones, the BS..."

"Wait a minute! How can someone be cloning the 586 when Intel hasn't shipped it yet?"

"I told you it was fast."

"Let's leave the chip aside for the moment," said Sam, in a desperate attempt to keep his sanity. "Can I get the new CPU without replacing my whole system?"

"Of course you can. You can buy a Turbo X-Wing Accelerator Power Card. It's got a YOY 43.2 386DX and can go into any slot on your PC."

"Well, that sounds interesting. How much does it..."

"Of course, the bus keeps it from operating faster that ten megahertz, but you can't have everything."

"Or much of anything. Any other solutions?"

"You can buy a new motherboard for your old computer. I can sell you a 486XX/25 for..."

"486XX? What's disabled this time, the Mexican beer?"

"No, the I/O. It's blazingly fast if you don't try to get data out of it."

"Okay. For the sake of argument, let's say I want an XX. How much does a motherboard cost?"

"Have you considered your hard disk?"

"It's much too slow to use as a motherboard."

"That may be a large part of your problem. Maybe your boss needs a faster hard disk. Look, I've got a two-hundred megabyte scuzzy screamer for six hundred dollars."

This impressed Sam. "Really? A SCSI for six hundred?"

"Well, it's scuzzier than most. In fact, it makes this scraping sound during seeks."

"I see. This disk really is a screamer. How much for the motherboard?"

The proprietor was silent for a moment. "You know, maybe the XX isn't the system for you. I just got in a shipment of..."

* * *

The next day, Sam entered Mr. Greenway's office with a confident smile on his face. "Mr. Greenway," he said, "I bought a computer you can't possibly object to — an IBM."

"Potomkin," said Mr. Greenway, "you're fired!"

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*Lincoln Spector is the author's real name, appearing on both his driver's license and his birth certificate. An associate editor at* ***PC World****, Lincoln can be reached via MCI Mail as "LSPECTOR."*

Gigglebytes is a satirical column loosely based on computer industry events, trends and people. The opinions expressed in this column are the writer's and do not necessarily reflect those of *Computer Currents*.

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